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RIVERS OF INDIA

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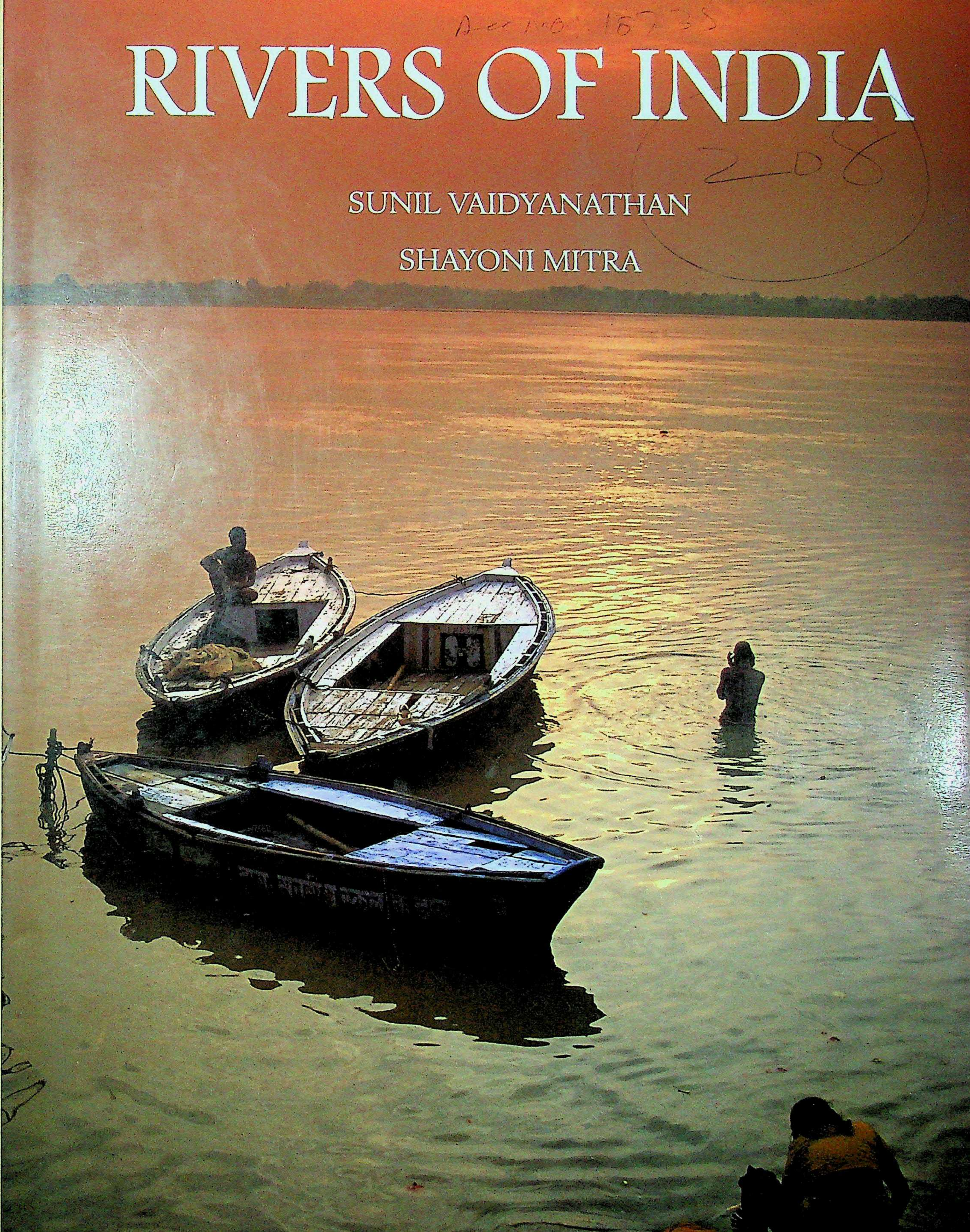
SUNIL VAIDYANATHAN

SHAYONI MITRA



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RIVERS OF INDIA

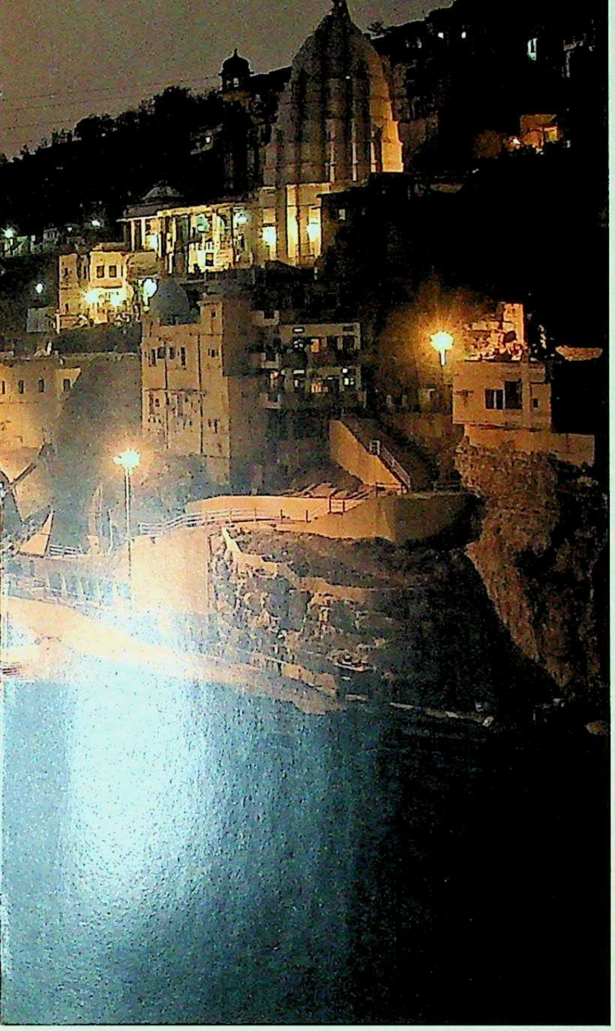
O nadi re,
Ekti kotha shudhai shudhu tomare -
Bolo kothaye tomar desh…
Tomar nei ki cholar shesh?
O nadi re…
E- kul bhenge o-kul tumi goro,
Jar e-kul, o-kul, du-kul gelo, tar lagi ki koro?
Tomar kono badhon nai,
Tumi ghor chara ki tai?
Shukh dukkher kotha kichu koile na hoi amare…
Bolo kothaye tomar desh…

O river!
Let me ask you one simple question
Tell me whither lies your land
Tell me whether your journey is without end

O river!
Your break one bank to build the other
But what is your plan for one
who has lost both the banks?
You have no bindings anywhere
Has this made you a vagrant wanderer?

Come, share some of your smiles
and tears with me.
Tell me, whither lies your land…

– from the film *Neel Akasher Niche*,
(1959, dir. Mrinal Sen; lyrics by Gouri Prasanna Majumdar)



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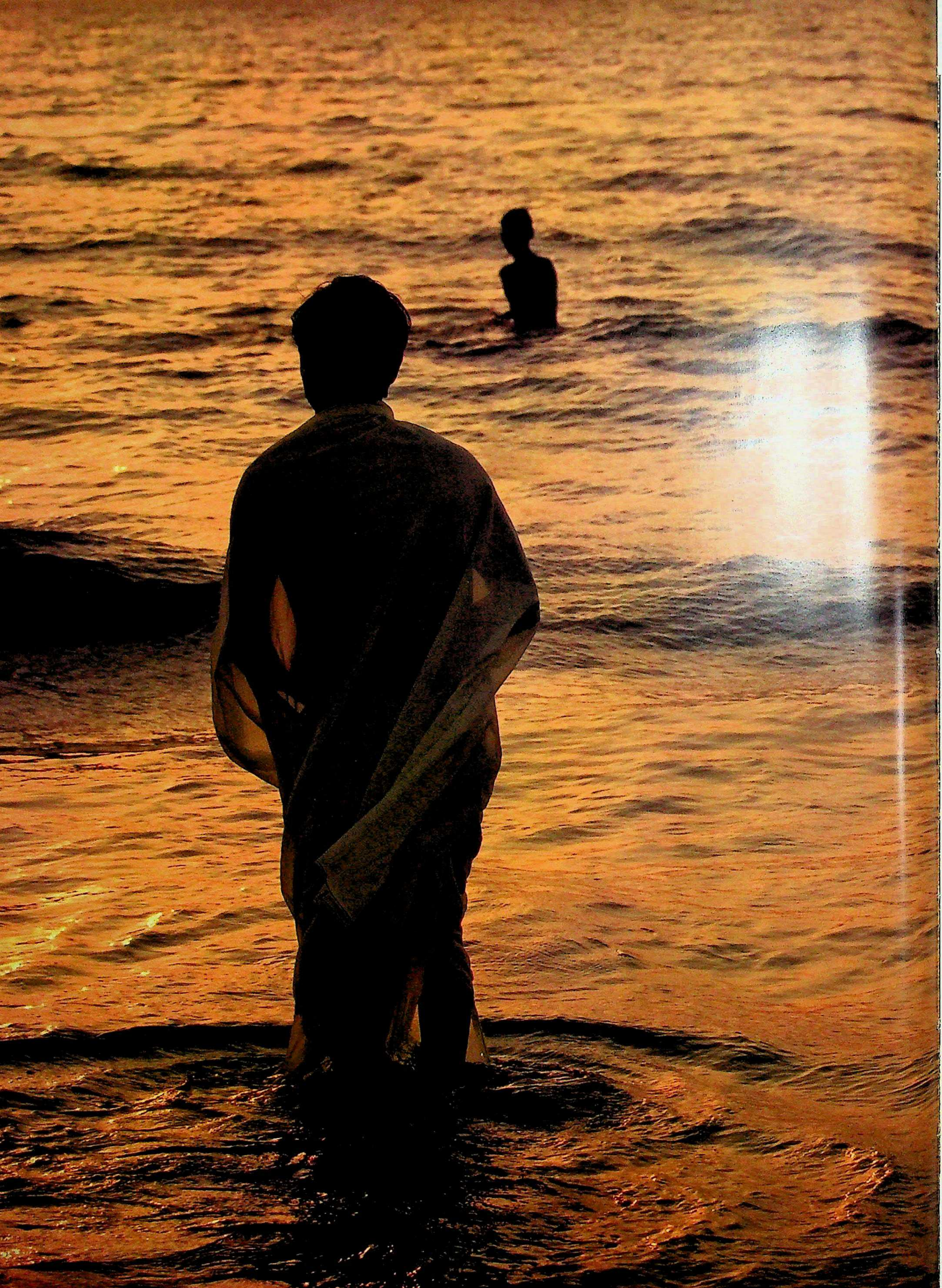


PREFACE

"More than one-half of the world's major rivers are being seriously depleted and polluted, degrading and poisoning the surrounding ecosystems, thus threatening the health and livelihood of people who depend upon them for irrigation, drinking and industrial water."

– Ismail Serageldin,
Chairman of the World Commission on Water for the 21st Century

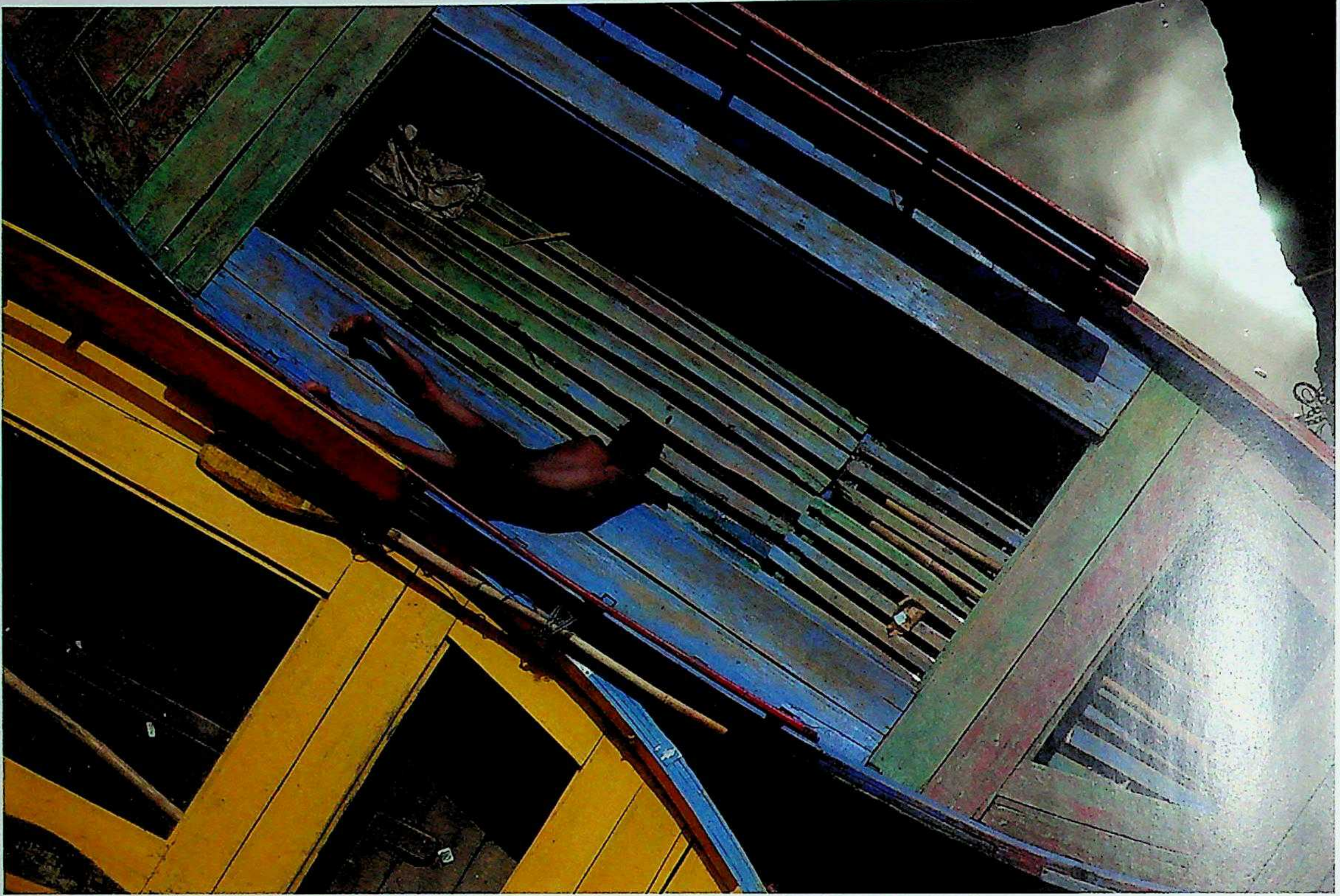
* * *

To follow the course of the great Indian rivers is a dream. We are fortunate that this dream manifested into the reality of this book. The central theme of this book delves into the importance of water, the important river systems of India, rivers as sustenance to communities and ecological systems and as a source of inspiration for these communities that live along them. Ironically, while following the course of India's major rivers, a substantial portion of our daily budget was spent towards buying bottled water!

Working on this book was both an enlightening and frustrating experience. We journeyed for many years along the course of India's major rivers in a quest to explore the symbiosis between our rivers and the people who live along them.

Being a photojournalist and writer in India is like living simultaneously in the reality of many parallel universes. Similarly, you cannot separate religion from the river in India. While it is a known fact that the piety of Indians is legendary, one is often appalled at the lack of civic sense and insensitivity towards the environment. In India, places along the rivers suffer the most in

Facing page: *Pilgrims take an early morning dip at the point where the Narmada River meets the sea at Bharuch, Gujarat.*



A boatman enjoys his afternoon siesta in Garhmukteshwar.

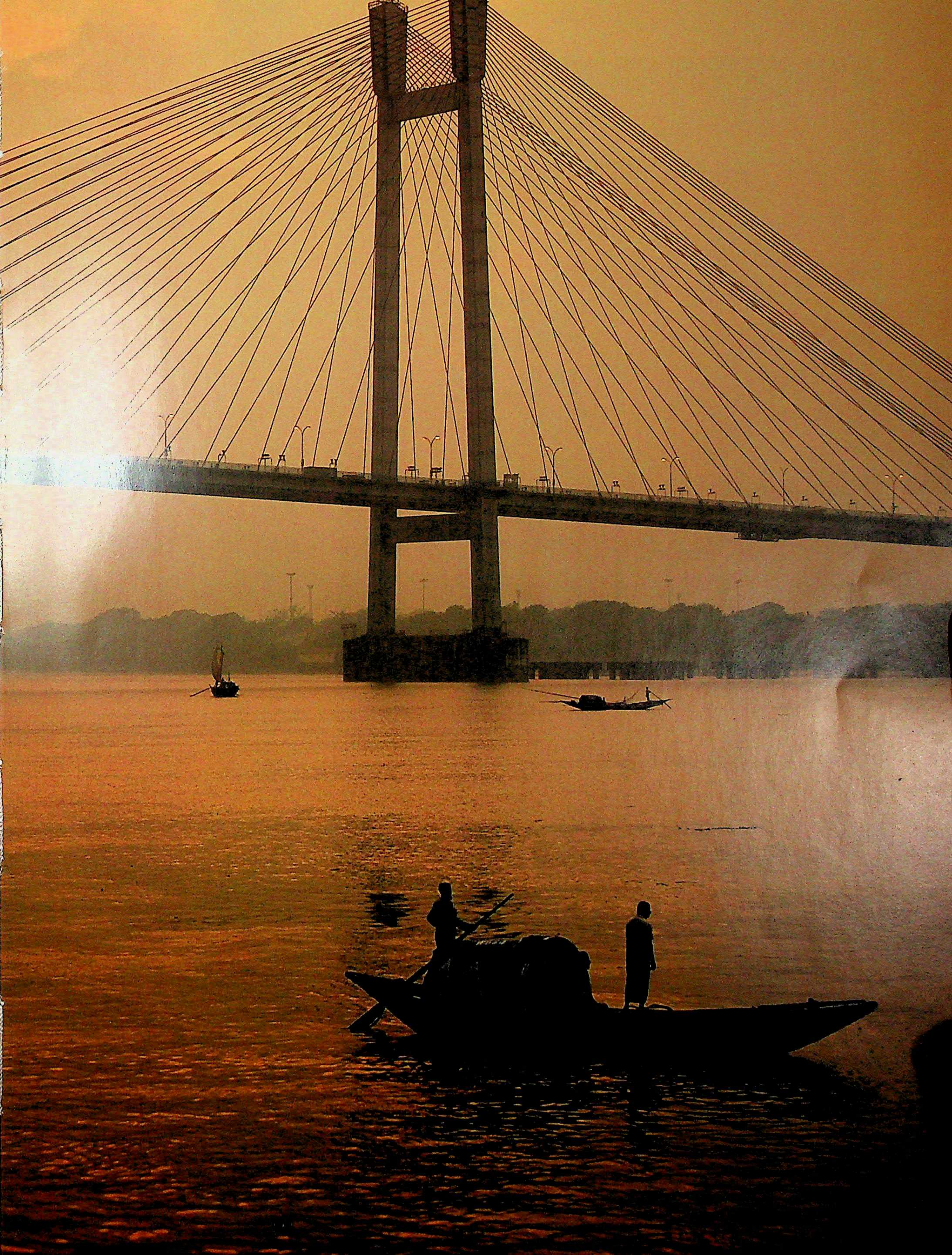
Facing page: *Country boats overshadowed by the Vidyasagar Setu in Kolkata.*

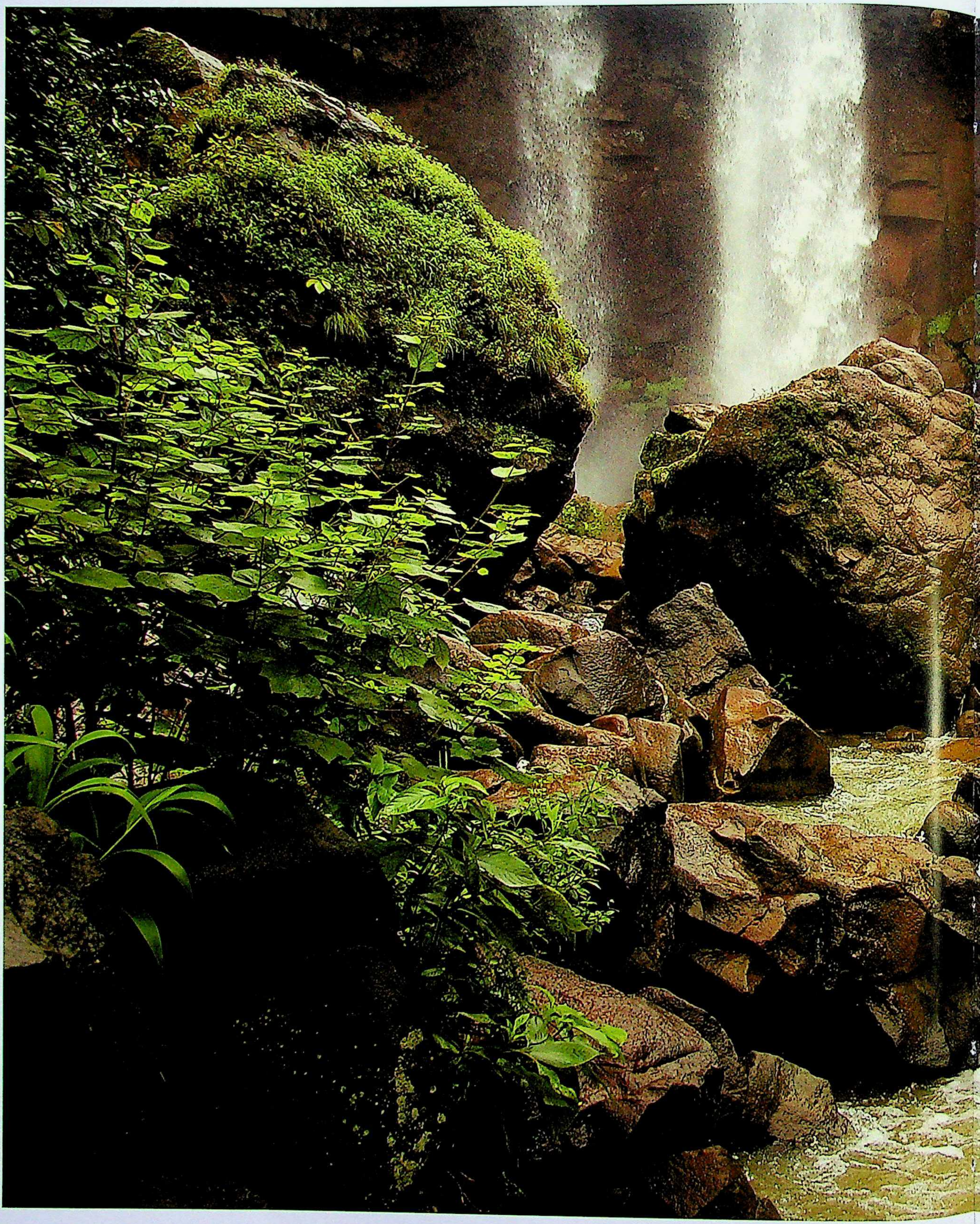
Pages 10-11: *Just six km. northwest of Narmadakund in Madhya Pradesh is the famous Kapildhara waterfall.*

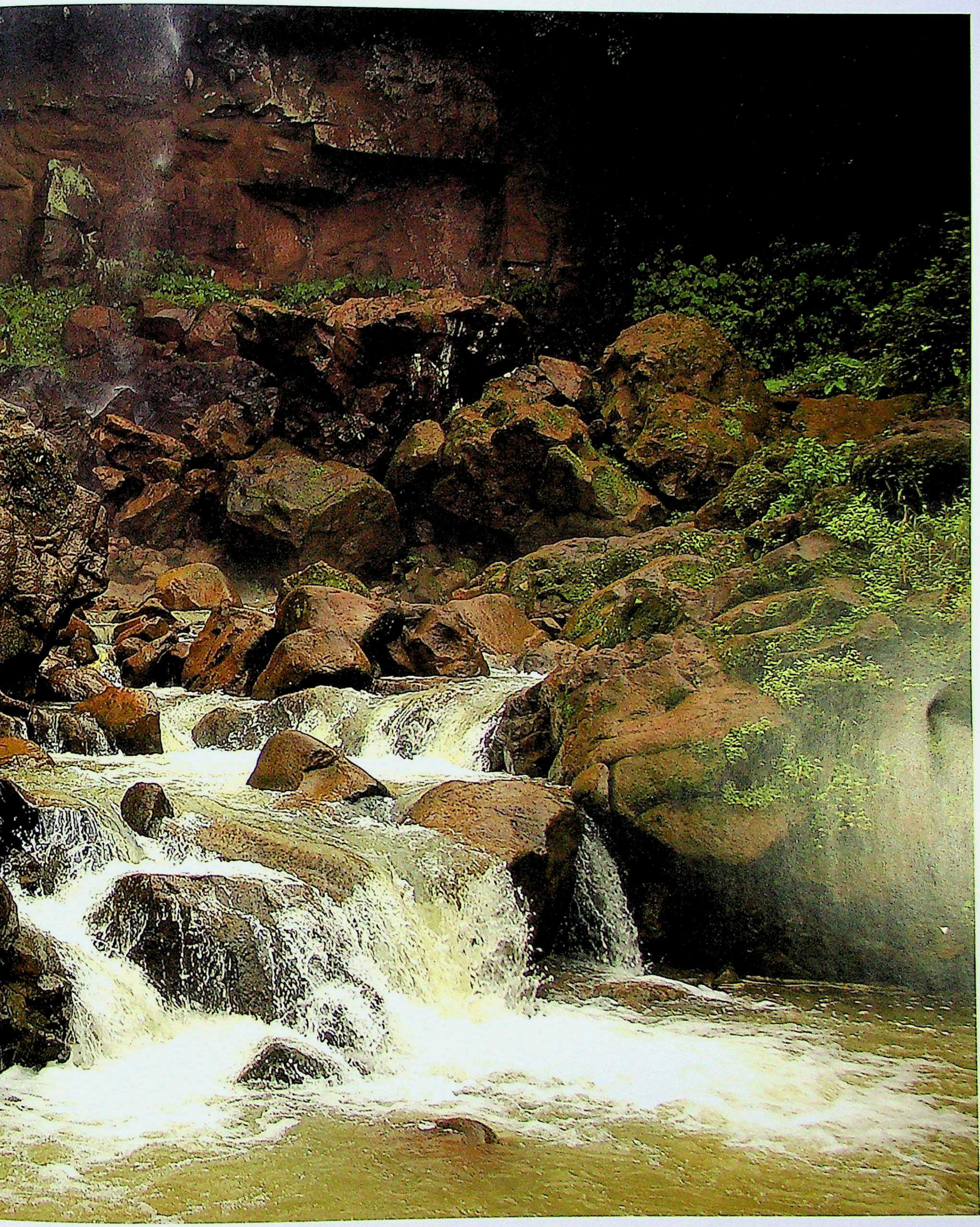
terms of sanitation and cleanliness. Rivers have a self-cleansing ability, but if people choose to misuse them continuously, they can no longer support life and progress. When we travel along the rivers of India, we retrace the veins which sustained the great civilizations that were predecessors of modern India. Even today, rivers are the primary support systems of contemporary civilizations. In fact, every one of the 1.21 billion people who live in India are directly or indirectly dependent on rivers for their sustenance. It is thus our moral responsibility to treat these water bodies with the respect they deserve.

As concerned photojournalists and environmentalists, we hope our representation will help change the destiny of these magnificent water bodies. By rousing collective conscience and consciousness, we hope to spark a debate. To claim that our singular effort will result in cleaner rivers would be stretching the truth; however, we do hope that our efforts will contribute to a greater understanding of issues that affect the rivers of India.

Sunil Vaidyanathan & Shayoni Mitra







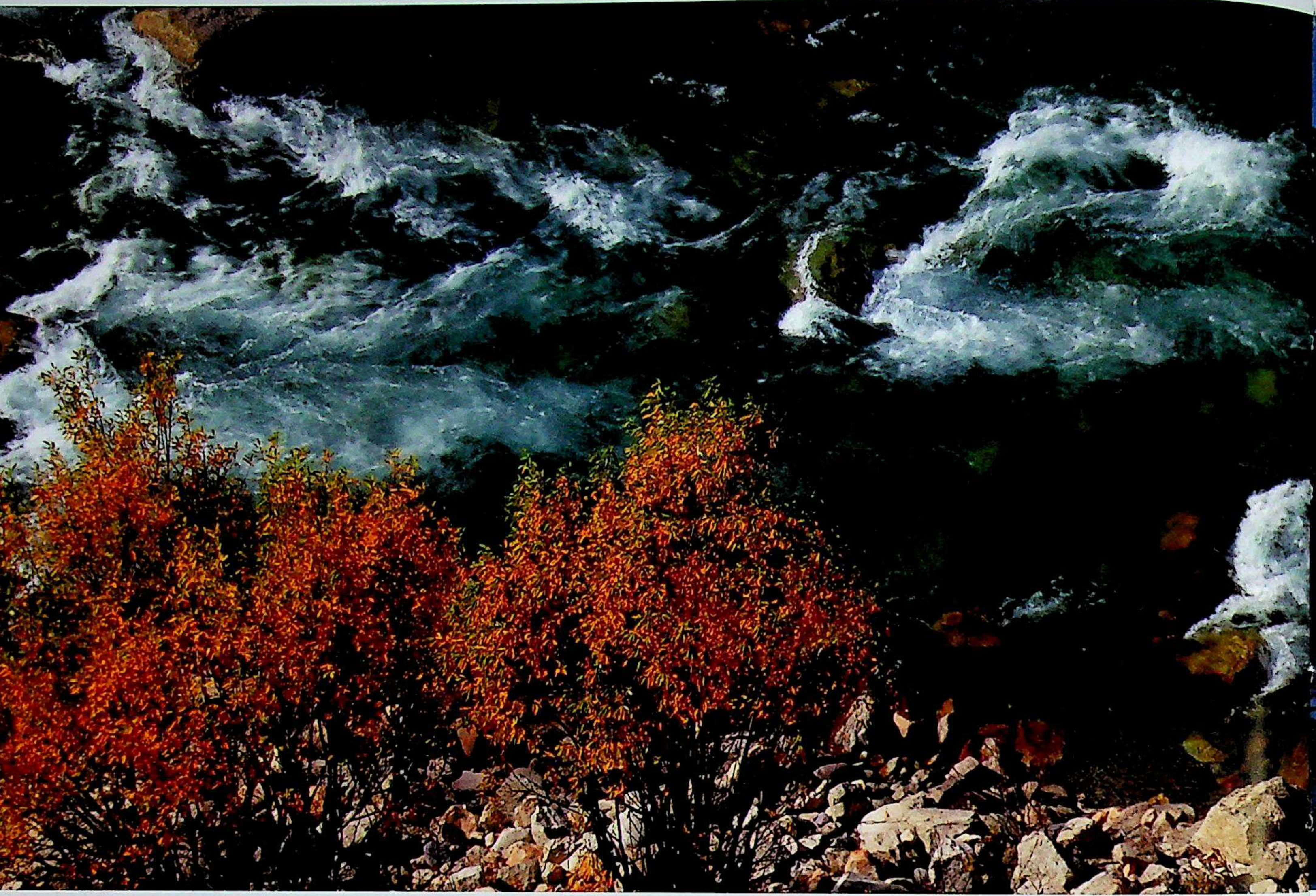
INTRODUCTION

Ever since human beings have lived in organised societies, rivers have played an important role in creating cohesive interdependent communities. Like all ancient civilizations, the origins of India were shaped many centuries ago, when ethnic groups from the far north settled in the more hospitable Indus Valley. The single decisive factor that has made it possible for man to settle in permanent communities is agriculture. In ancient Egypt, the practice of slave labour unknowingly created a unified agrarian society. Consequently, when farming developed in the Middle East as early as 6500 BC, people ceased to be nomadic. They could finally control the production of food and be assured of its perennial supply. However, agriculture has always depended on a reliable and continuous source of water, and this is where rivers played an essential role.

In the Indian subcontinent, the banks of perennial rivers like the Indus, Ganges, Yamuna and Brahmaputra were among the earliest to be inhabited. Even today, the Indus and Gangetic valleys are the most populated zones in the Indian subcontinent. The five rivers of Punjab, along with other snow-fed northern rivers, irrigate an area that stretches from northwestern India to eastern India and Bangladesh.

* * *

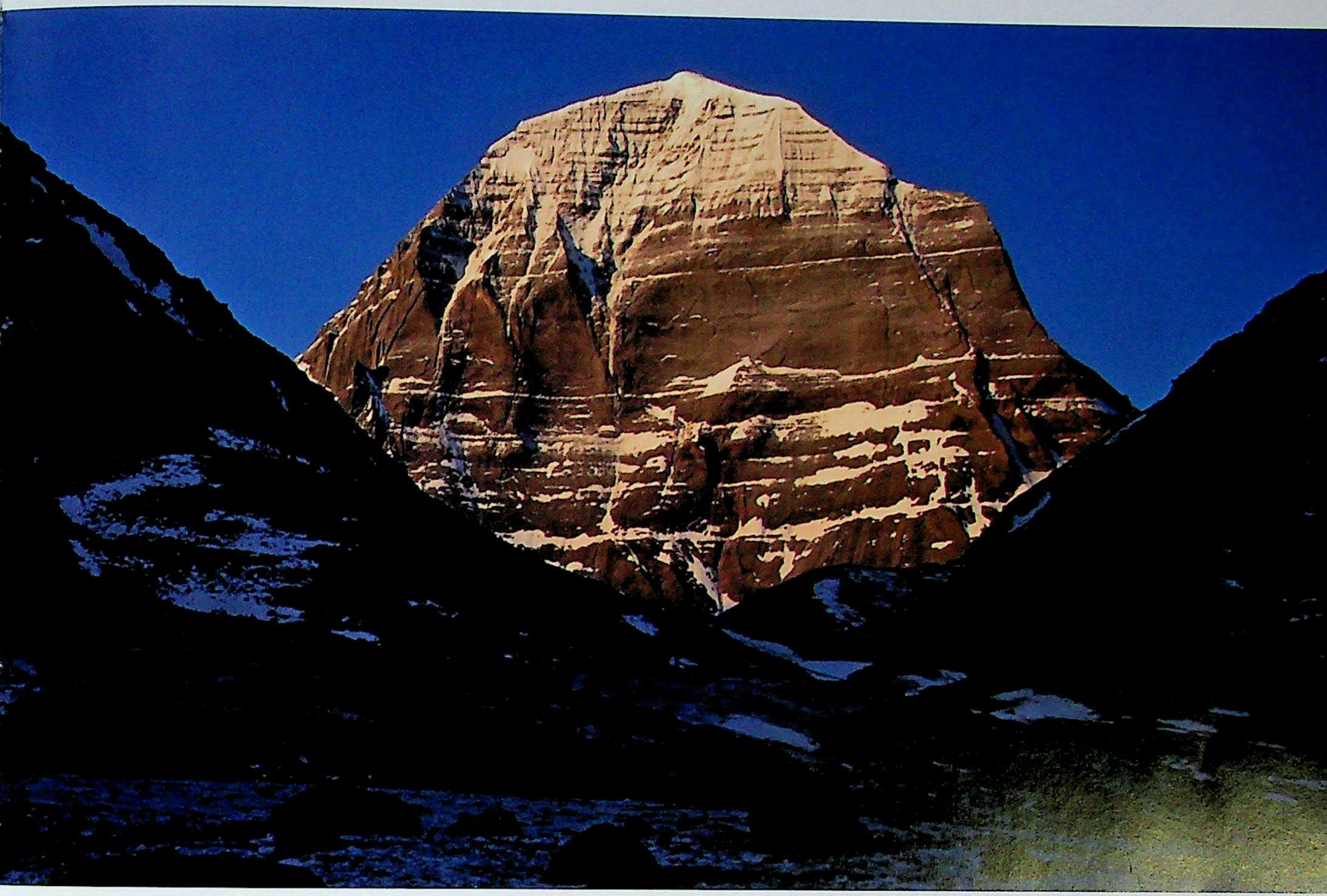
The confluence of the Zanskar and Indus Rivers in Jammu and Kashmir. Originating in the Tibetan Plateau near Lake Mansarovar, the Indus runs a course of 1000 kms. through the Ladakh district of Jammu and Kashmir before entering Pakistan near Gilgit. It continues its southbound journey through Pakistan and merges with the Arabian Sea in the port city of Karachi. The total length of the river is 3,180 km (1,976 m) and it is Pakistan's longest river. The Indus Valley Civilization was one of the earliest structured settlements and sites like Mohenjo-Daro and Harappa, which date back to around 3300 BC represent some of the largest human habitations of the ancient world.



The Sutlej is the longest of the five rivers that flow through the historic crossroad region of Punjab in northern India and Pakistan and is the easternmost tributary of the Indus. Its source is at Lake Rakshastal in Tibet near Mount Kailash, and it flows generally southwest entering India through the Shipki La pass in Himachal Pradesh.

In spite of rapid urbanization, the landscape along the rivers has retained its lyrical eternalness. Today, with modernization making in-roads into every little city and town, the banks of India's rivers are where you best see the symbiosis between man and nature. Despite being the most important prerequisite for civilizations to thrive on, modern man has conveniently forgotten the role that rivers play. This very lack of concern has reduced our rivers to sewage and drainage systems in most parts of the country. Little does one realize when a tap is opened in the big cities, its source is perhaps a meandering river hundreds of miles away.

Human beings can live without food for a month, but will die in less than a week without water. However, the trouble with water is that its supply does not increase proportionately to its demand. Although there is no scarcity of water in the world, we are rapidly running out of usable water and this trend keeps going from bad to worse. The amount of water available to us today has not



increased since pre-historic times. But the population of the world keeps growing by alarming proportions and all these people are completely dependent on water for their sustenance. There are 19 million new births in India every year. It is believed that by the year 2025, there would be a tremendous strain on resources to feed such a large population. Farmers currently use 85 percent of India's water resources. Irrigation is increasing the soil salinity, while pesticides have poisoned an unsettling amount of land. The nagging question is not whether we will run out of water, but when.

Mount Kailash is a peak in the Gangdisê Mountains, which are part of the Tibetan Himalayas. It lies near the source of some of the longest rivers in Asia: the Indus, the Sutlej, the Brahmaputra, and the Ghaghara (a tributary of the Ganges).

The issue of water crises is related to matters of distribution rather than supply. Only one-third of the water that drains into the sea annually is accessible to human beings. Although this proportion does not seem much of a threat now, the demand for water will double in a couple of decades and it is important to note that much of the water available today is degraded by eroded silt, sewage and industrial pollutants. As a result of drinking contaminated water, a child dies every eight seconds. The sanitation trend is getting worse, due to the exodus of rural peasantry to urban areas in search of livelihood. Today, internal migration is the biggest cause for the collapse of infrastructure in most Indian cities.

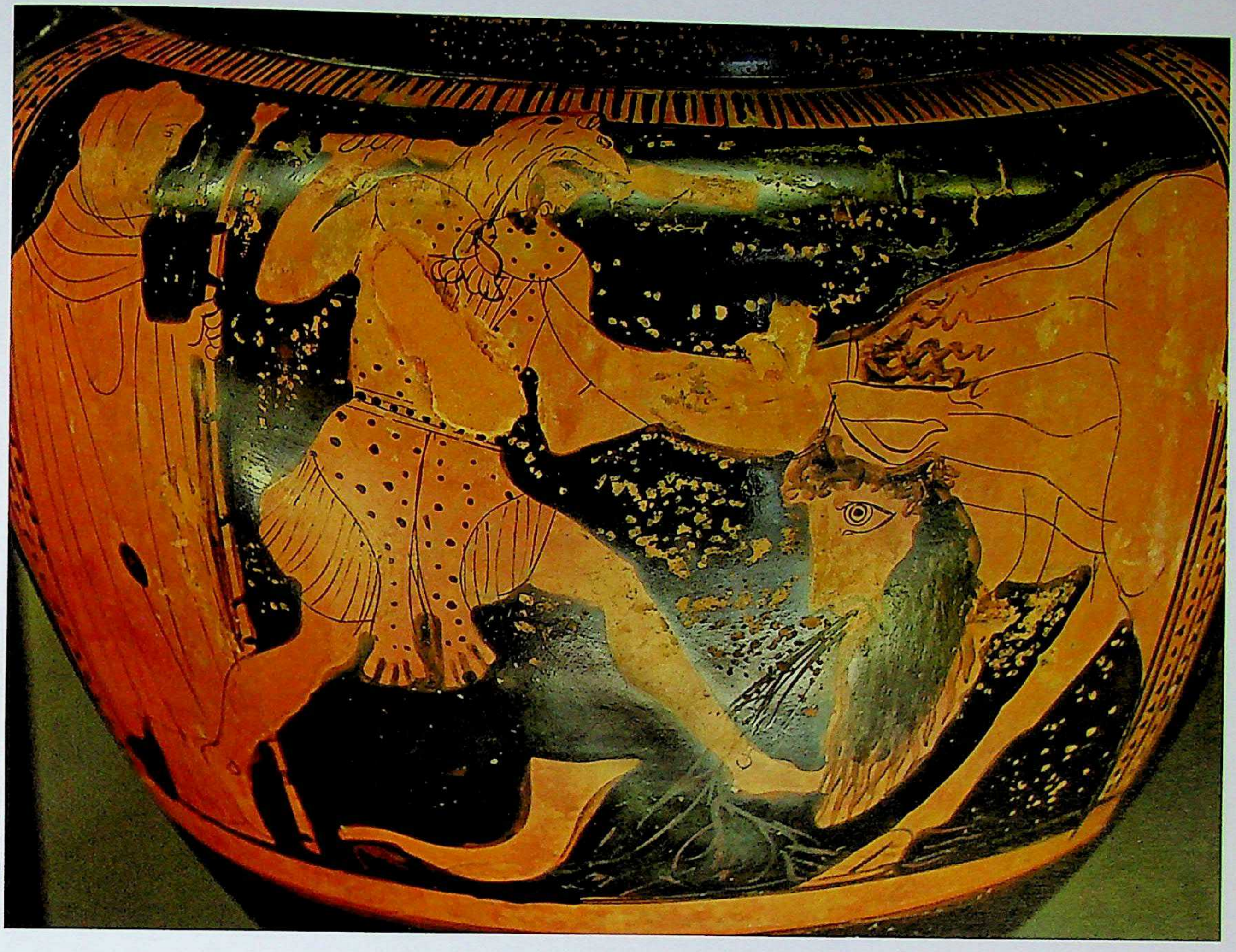
A river is the most important force that shapes the land in the tropics. Rivers erode the land and transport worn-out rocks downstream to deposit them elsewhere, creating new landmasses. The course of a river can be divided into three significant stages: youthful, mature and old. The youthful stage is the steepest part of the course (usually the source and areas close to it) where the water flows briskly and pushes loose weathered rocks downstream. When a river descends from the watershed, it enters its mature stage where the slope is gentler. Here the river carries a much larger volume of water as several smaller tributaries join it. The maximum amount of suffering due to floods, erosion and silting happens in this stage. Eventually, the river reaches the old (final) stage where it becomes considerably calmer as it makes its final journey towards the sea.

Towns and cities situated downstream often feel the consequences of careless alterations made in the age-old hydrological cycle. The symptoms have become very visible today, with rivers suddenly raging out of control wetlands drying up, and contaminants entering the groundwater.

This statue of a river deity standing on a makara *(mythical aquatic creature—the* vahana *of Ganga and Varuna) was found in the ruins of the Gandharan city of Taxila, dating back to c. 6th century* BC.

Rivers as cultural icons

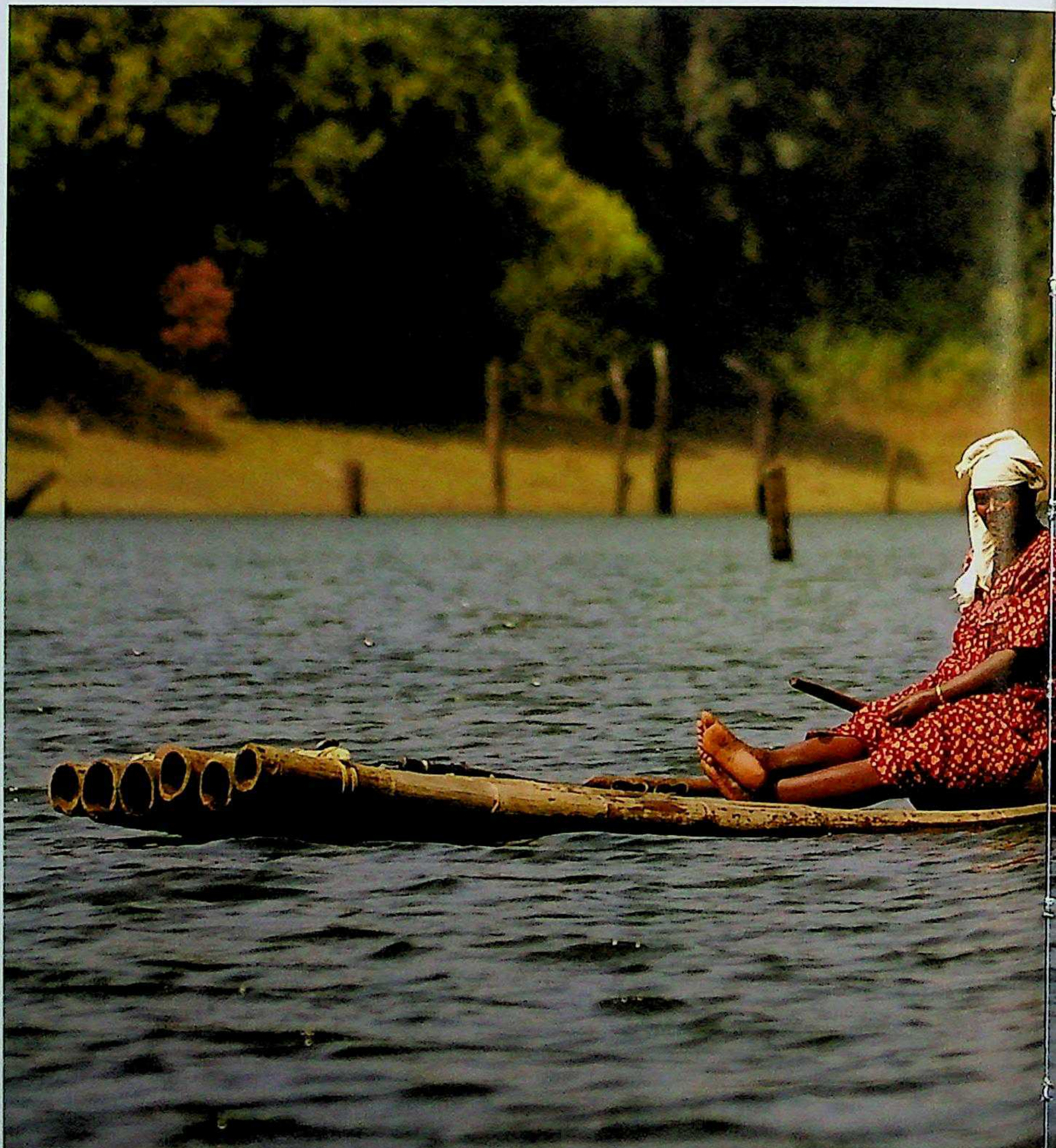
In India, rivers are the *axis mundi* of Hindu belief. The Ganges, for example, embodies the 'water of life.' Hindus believe that bathing in the sacred rivers will result in the remission of sin, and circumvent rebirth. This is not surprising, considering the importance of water and the dependence of human life on it. As a primordial element, water has inspired myths and legends throughout the world. Every culture and religion has a myth dedicated to water bodies. The Vedas and Puranas state that all inhabitants on earth emerged from the sea. Thus, prayers to Varuna (the god of water) were amongst the earliest composed. The change from Vedic Brahmanism to Hinduism diluted many ancient practices, but the sanctity of nature divinities was well preserved. In the west, with the end of paganism, spiritual connections with nature were largely severed, but in India, this link has endured.



Greek mythological character Heracles battles with the River God Achelous (on the right) for the hand of Deianeira, a river nymph.

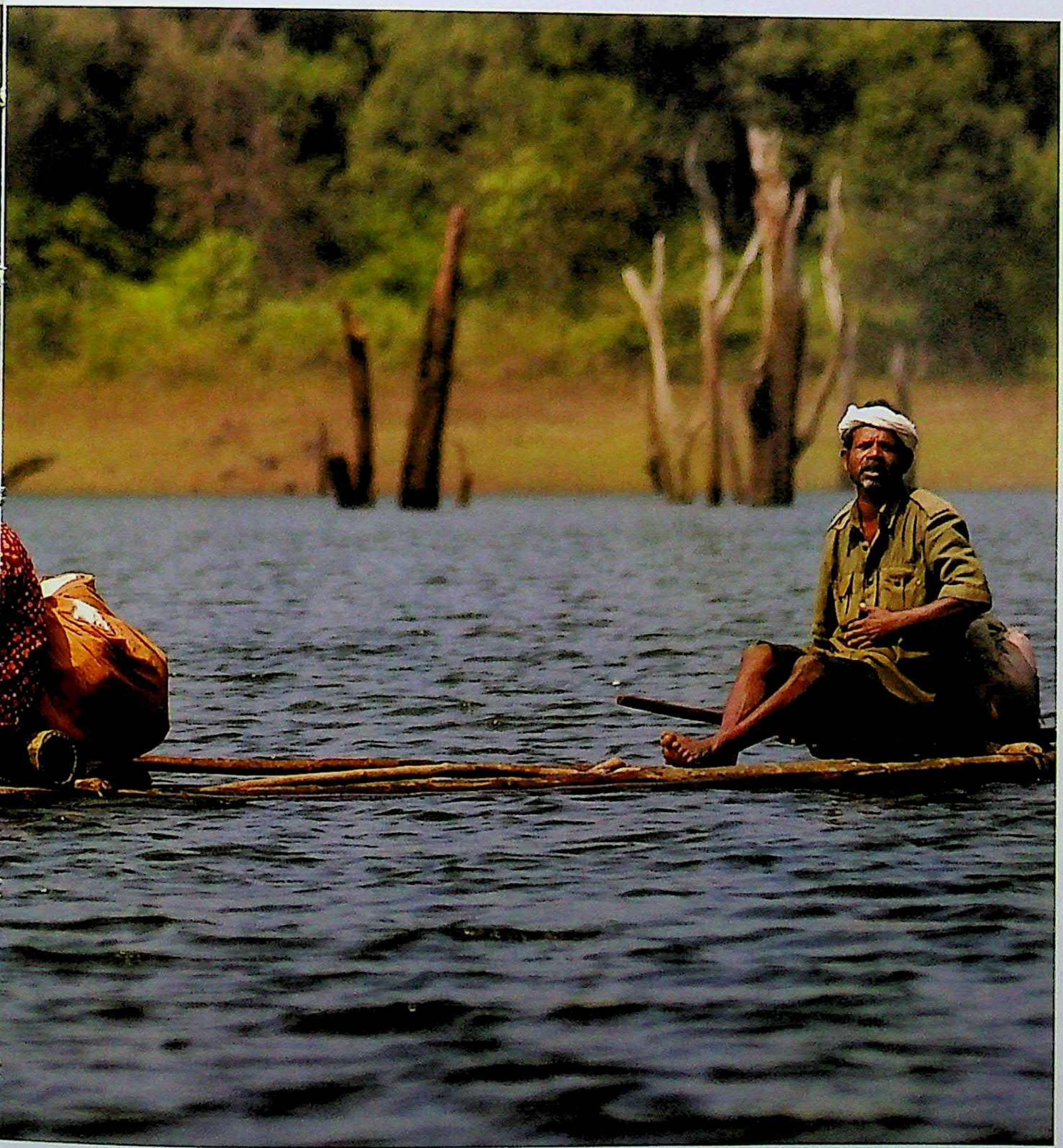
Water divinities of various kinds appear in the mythologies of many cultures. The world abounds in sacred rivers, springs and lakes. Early Egyptian scrolls refer to Hapi, the presiding spirit of the Nile. The annual flooding of the river was said to herald his arrival. The Nile God who brought fertility to the land amidst periods of prolonged flooding was both benevolent and unkind. Although male, Hapi was usually depicted with full breasts, a large belly (a sign of fertility) and blue or green skin that symbolized water. The Babylonians worshipped the Euphrates and the Tigris as gods and the Greek and Roman renaissance, which placed human spirit above religion (virtually abolishing it), venerated water bodies.

Although the Judeo-Christian tradition generally avoids the adulation of natural phenomena, there are numerous examples of holy rivers, wells, and springs. The River Jordan is held sacred because it is believed that John the Baptist baptized Jesus Christ in its waters. Islam may have a disdain for iconic imagery, but this did not prevent them from adopting the pre-Christian belief of water being revered as a life force. The Well of Zamzam is located within the Masjid al Haram in Mecca, near the Kaaba. Mecca is located in a parched valley. Muslims believe that the well was revealed to Hagar, handmaiden to Abraham's wife Sarah, and mother of Abraham's son Ishmael. When Hagar learnt that God had ordered Abraham to abandon her in the desert, she respected his decision. However, she soon ran out of water and baby Ishmael began to suffer. Islamic legends state that Hagar ran several times in the blazing heat between the hills of Safa and Marwa in search of water for her child. God then sent the angel Gabriel, who scraped the ground, causing a spring to gush forth. Historians however believe that the oasis might have been of importance to the pre-Islamic inhabitants of Mecca and is perhaps one of the primary reasons why Mecca became a pilgrimage and trading centre.

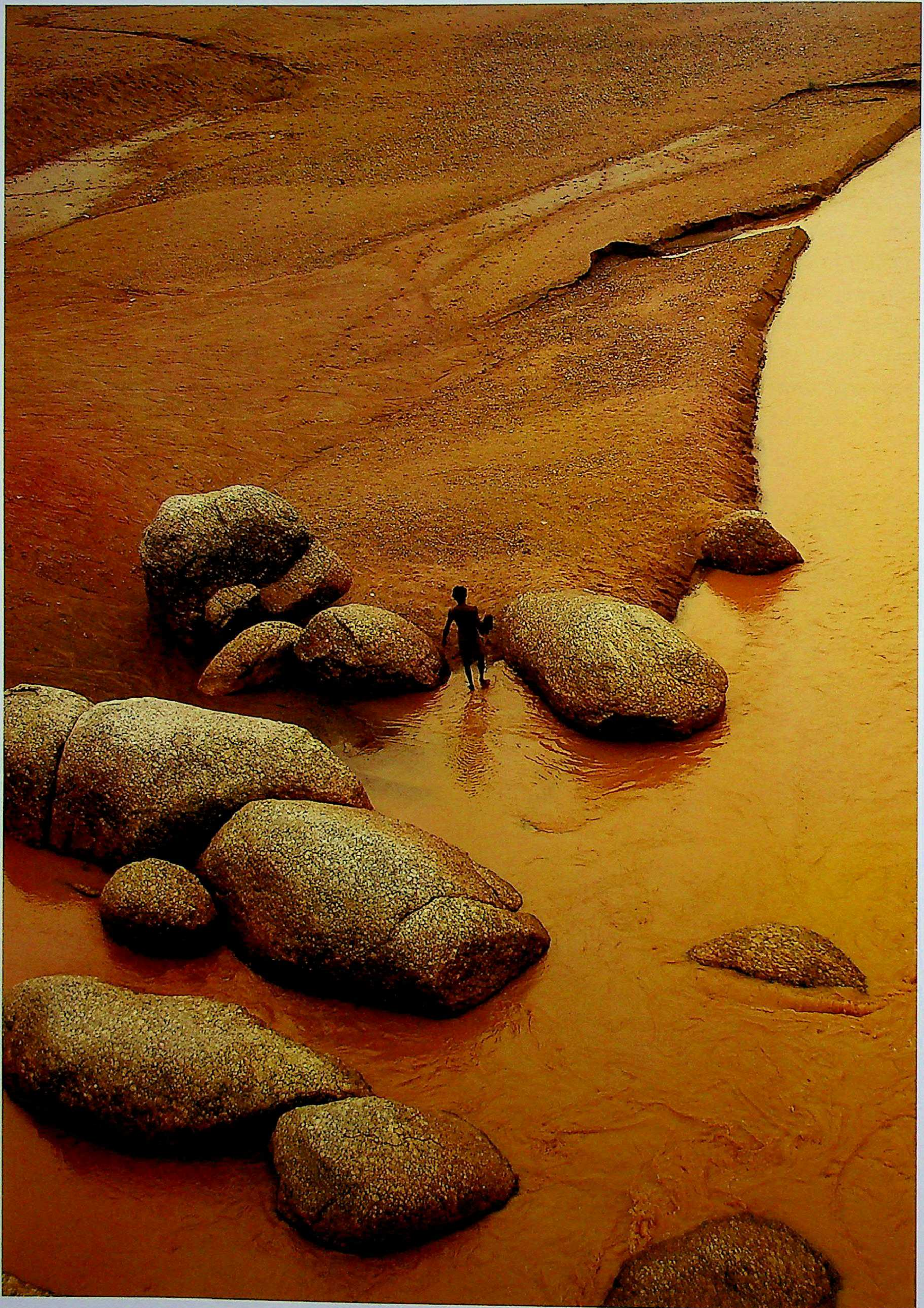


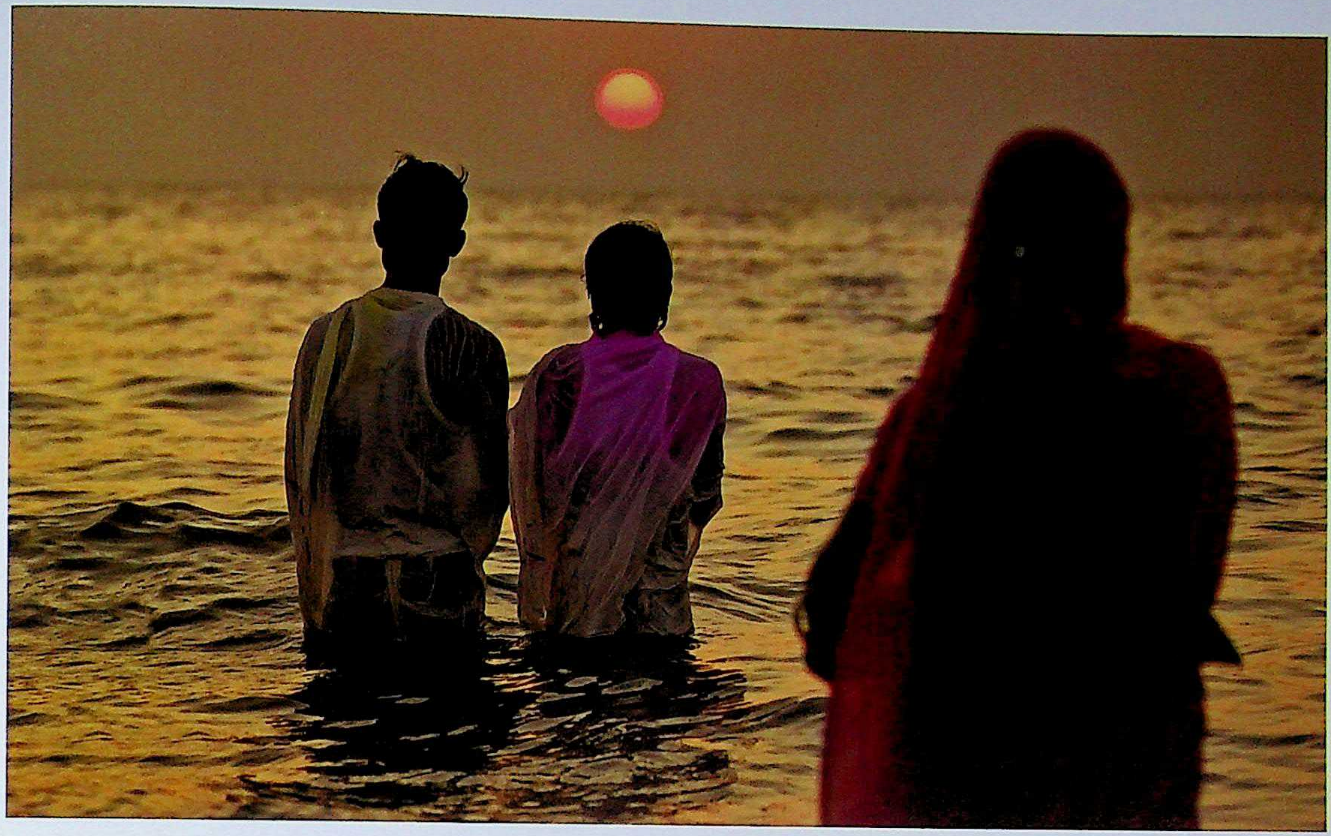
While the existence of some rivers are preserved only as myths in the minds of the devout, most have survived the vicissitudes of time and the rise and fall of civilizations. In most cultures, the major rivers were conferred with the status of father figures and their tributaries as nymphs. However, in the Indian subcontinent, the determinant has been topography. The broader Indus, Brahmaputra, Sone, Gogra and a few others are male, while the Ganges, Yamuna, Saraswati, Narmada, Kaveri and Godavari are female.

Various Puranas proclaim the Ganges, Yamuna, Saraswati, Brahmaputra, Godavari, Narmada, Sindhu (Indus) and Kaveri to be among the most sacred. But the Ganges still dominates the hierarchical order, even though there are legends about the Narmada and Godavari being holier. Her perennial flow, potent sin-cleansing powers and immense popularity has ensured this position. The



Since the advent of civilization, human beings have invented ingenious methods and techniques to ford rivers and streams. Tribals who live in the fringes of the Periyar wildlife sanctuary in Kerala use bamboo rafts to navigate the Periyar River.





Chhat Pooja: Pilgrims take a holy dip to pay obeisance to the sun god Surya off the Bharuch coast, Gujarat.

Facing page: *In Sonepur, the high mineral content of the soil gives the Mahanadi its distinctive colour.*

prayer rituals on the banks of the Ganges in Haridwar bear testimony to this. At sundown, thousands of worshippers pray to the Ganges in a ritual that has been practiced for centuries. Unfortunately, this popularity has also led to the river's decline and has made the Ganges, and her tributary the Yamuna, India's most polluted rivers.

This book discusses the issues that plague India's major rivers. It aims to bridge the gap between the people along the rivers who are victims of their own avarice and the people of the cities for whom the hydrological cycle is just an alien term. The blame has to be shared equally. It is rather fashionable to place the responsibility for pollution solely on industry. However, statistics reveal that 80 percent of the pollution is domestic in nature and the biggest pollutant is untreated sewage.

An attempt has been made to explore the symbiosis between the rivers and communities that live along them in a journey that is both magical and distressing. If the pundit and the pilgrim, the politician and the bureaucrat and the millions who depend on the rivers for sustenance could be encouraged to treat these water bodies with greater respect, it would perhaps manifest in their resurrection.

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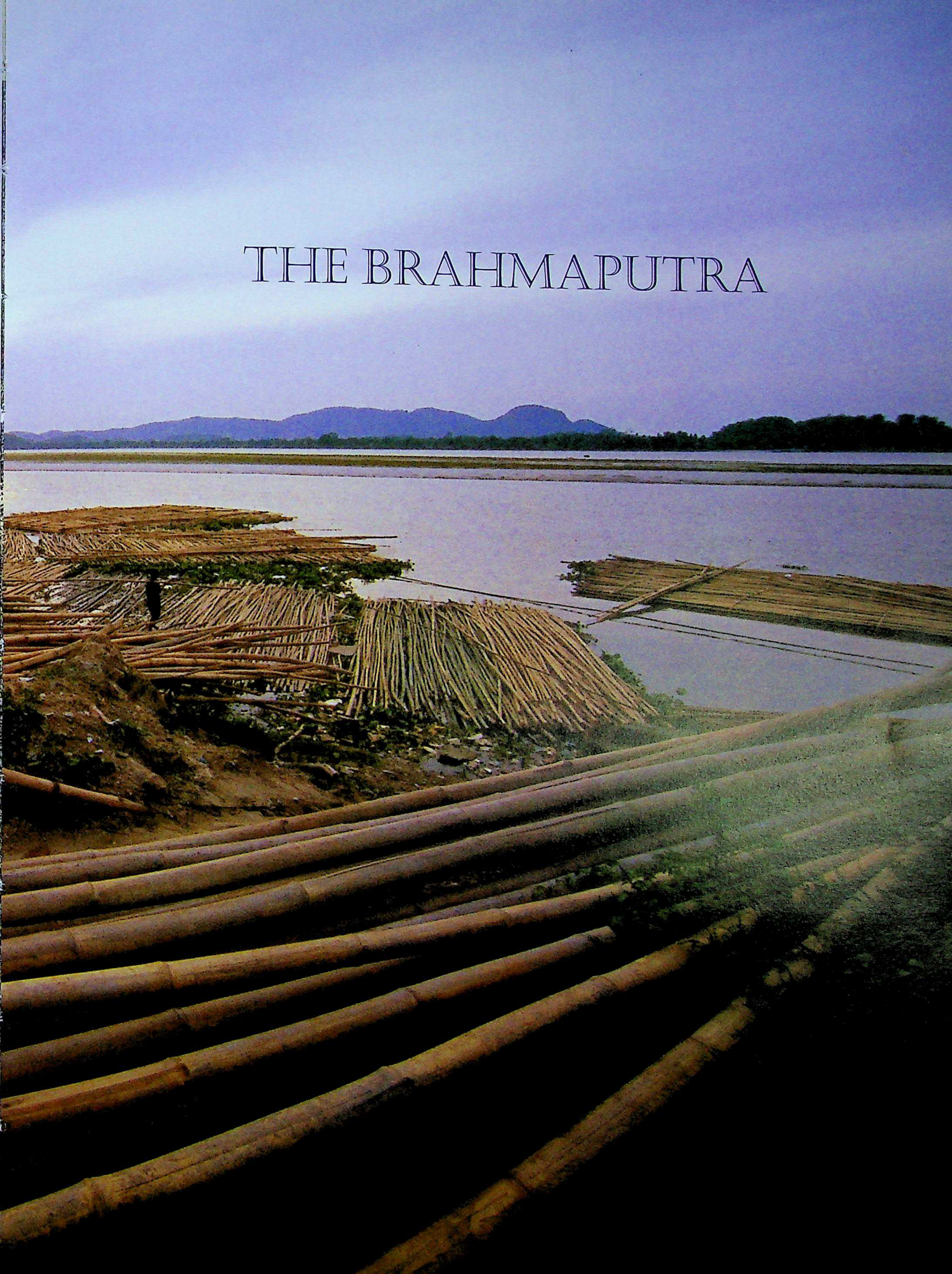
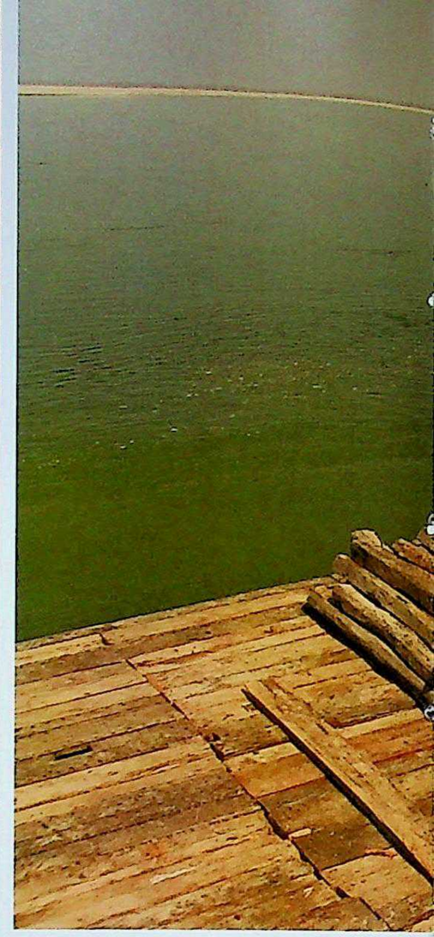
THE BRAHMAPUTRA





One of the most progressive tribes in Arunachal Pradesh, the Apatani, have a unique water management system, which allows them to cultivate paddy and practice fish farming simultaneously.

Pages 22-23: *The "Bamboo People" travel on rafts which are partially dismantled and sold en route. Their journey begins in Meghalaya or Arunachal Pradesh and ends in Dhubri, Assam.*

The Brahmaputra, the lifeline of northeast India, is undoubtedly one of Asia's most magnificent rivers. This river which is almost 3000 km long, is known by different names in the three countries it flows through (China, India and Bangladesh). Its uniqueness also lies in the fact that it represents and bridges three major religions: Hinduism, Buddhism and Islam, making it a virtual cultural consommé. Nothing can prepare the traveller for the vastness of this great water highway, where myriad channels ply through seemingly endless archipelagoes of sand.

The Brahmaputra is one of the few masculine rivers in India. This gender classification has resulted mainly from its sheer size and the strength of its currents, especially during the monsoon. In the tradition of Sanskrit literature, the sea is considered masculine while a river is usually feminine. In this context, it is important to note that Lauhitya (Brahmaputra) in ancient times was often referred to as a sea.

The origin of the Brahmaputra is associated with several legends. According to one story, Sage Shantanu and his wife took abode on Mount Gandhamadana. Brahma called upon the sage, who was away at the time gathering fruits and flowers in the forest. Brahma's eyes fell on Amogha, the sage's exquisitely beautiful

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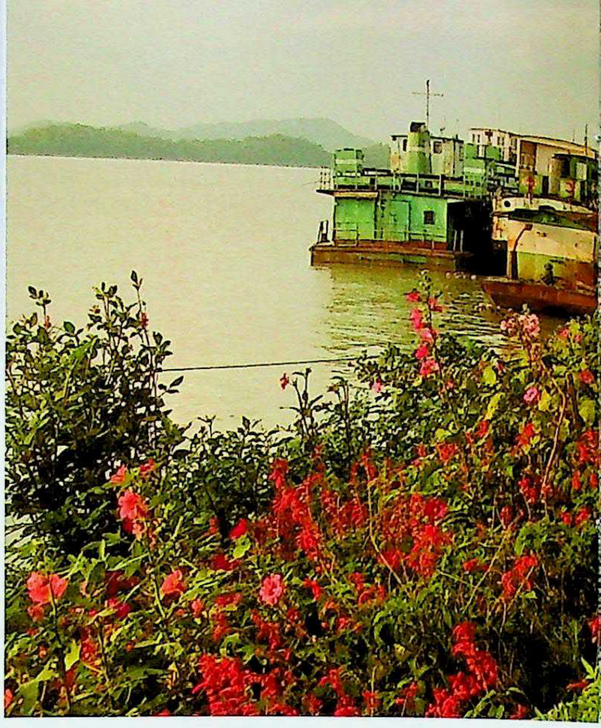
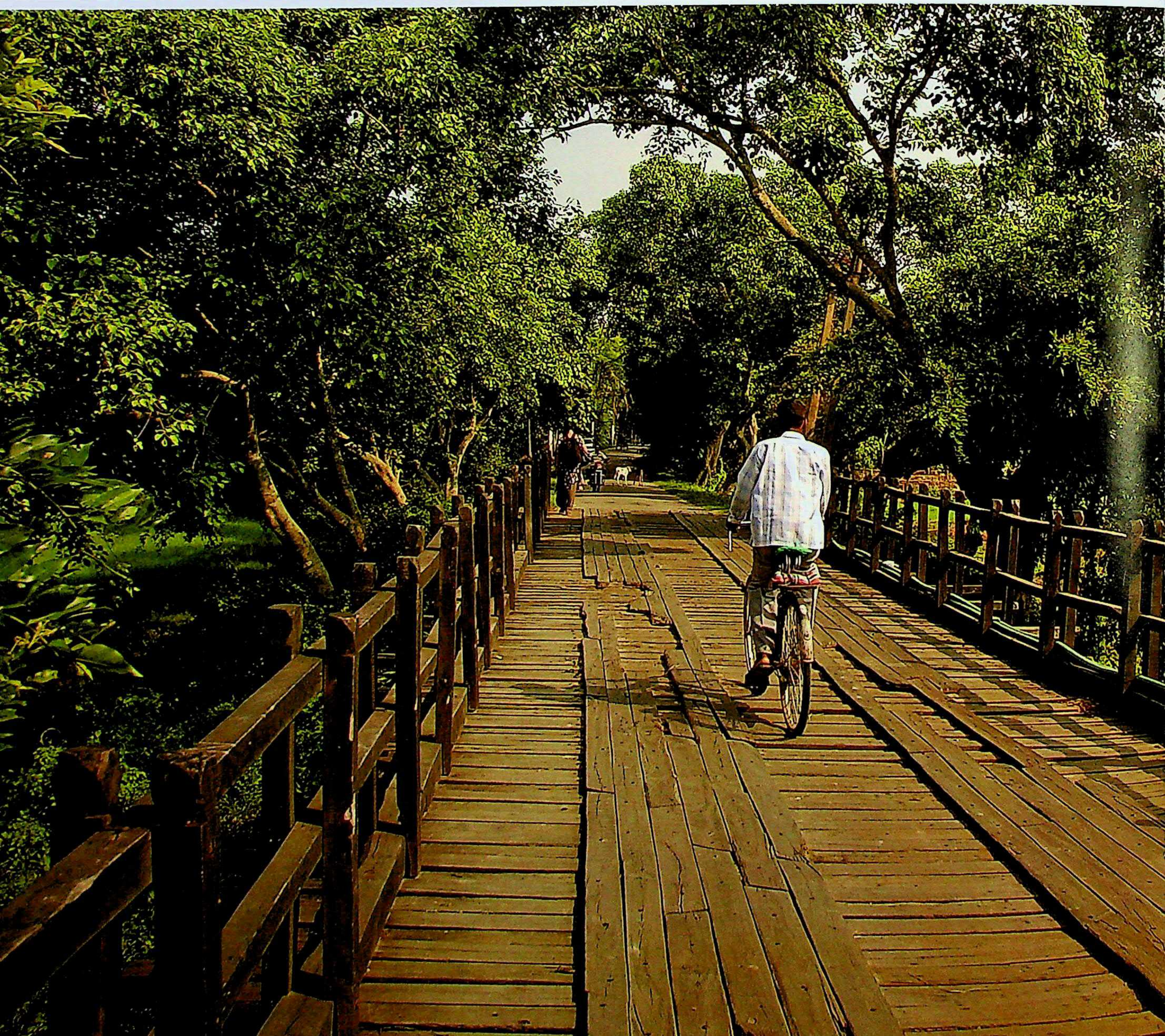
wife who failed to recognize him. Enamored by her beauty, he wanted her to bear his child. Amogha declined Brahma's overtures and even threatened to curse him if he dared to molest her. Saddened, Brahma returned home to 'Brahmalok' leaving his seminal fluid behind. The sage heard about Brahma's visit on his return. Using his divine powers, he learnt that Brahma's proposition was for the benefit of the universe. He then requested his wife to comply with the lord's wishes, but the chaste Amogha refused. The sage then infused the fluids left behind by Brahma and thereafter the union between him and his wife produced a child who was born as a shimmering watery form, with features resembling Brahma. They called him Brahmakunda and placed him between four mountains—Kailash, Gandhamadana, Jarudhi and Sambwarttaka. With the passage of time, this water body grew into a lake swelling up to forty miles, resembling the sea. It is said that Brahma descended on his swan mount to bless this child and named him Lauhitya Ganga; however, as he was Brahma's son (*putra* in Sanskrit) he earned the nickname 'Brahmaputra'.

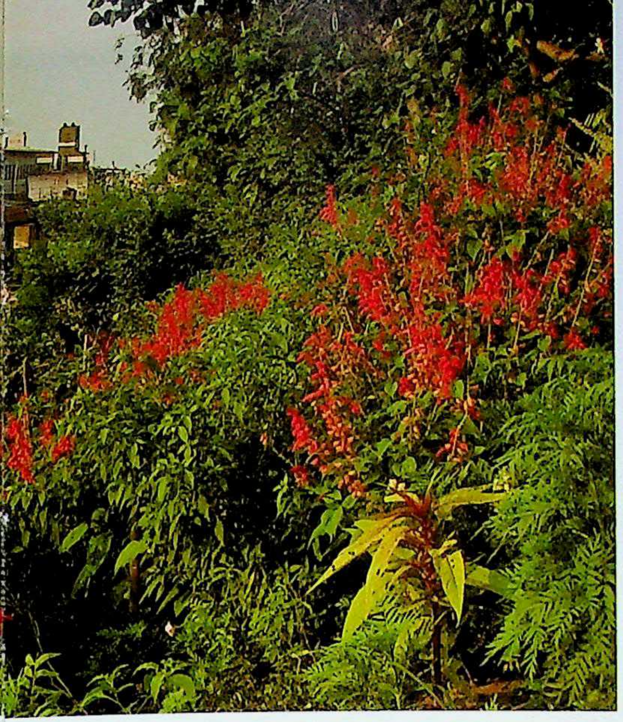
The numerous tributaries that feed the Brahmaputra rise in the Himalayan glaciers of western Tibet near Mount Kailash. Running east through Tibet, past the mountain mass of Namcha Barwa near the "Great Bend" of the Tsangpo (the main river of

Although many boats in Guwahati are decorated with dolphin motifs, a river dolphin is a very rare sight today.

Centre: *With very few bridges across the mighty Brahmaputra, vehicles cross the river on makeshift barges. Here in Pasi Ghat, Arunachal Pradesh, two ferries are joined together to support bigger vehicles.*



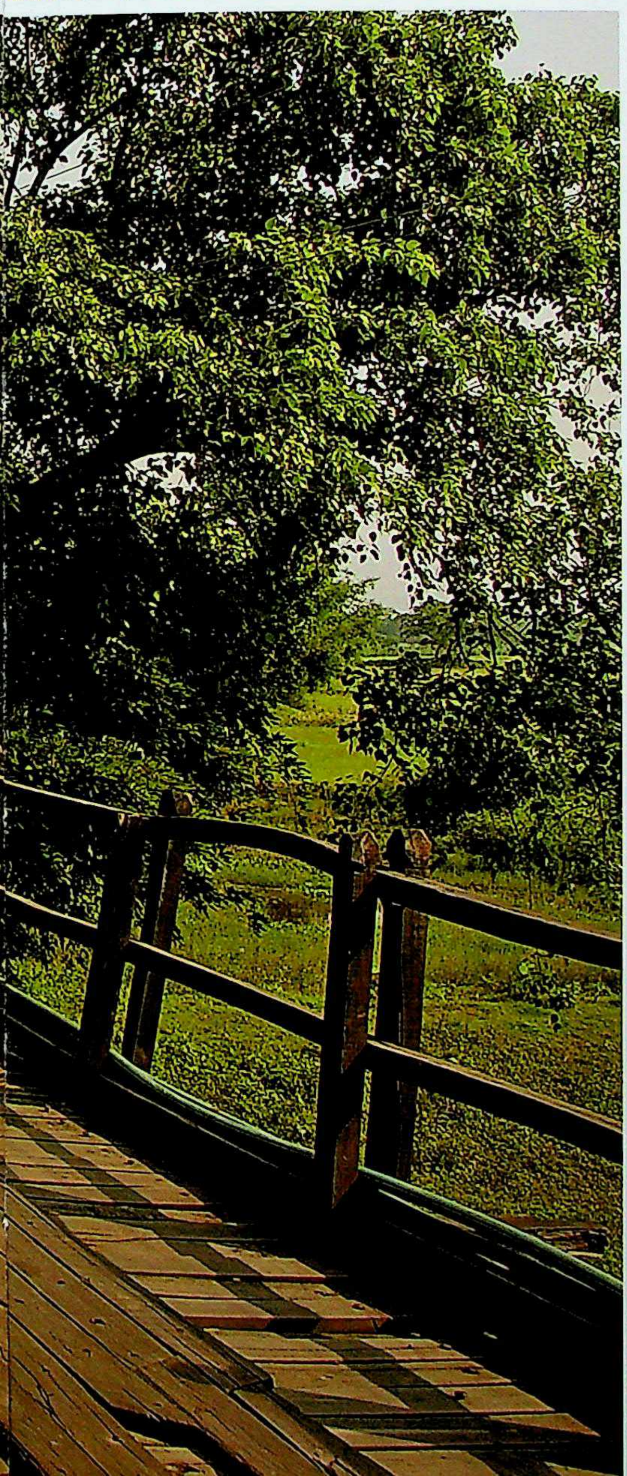




Clockwise from top left
A boat is the only way to get to the primary school, just across the river in Dhubri, Assam.

A river port, Guwahati.

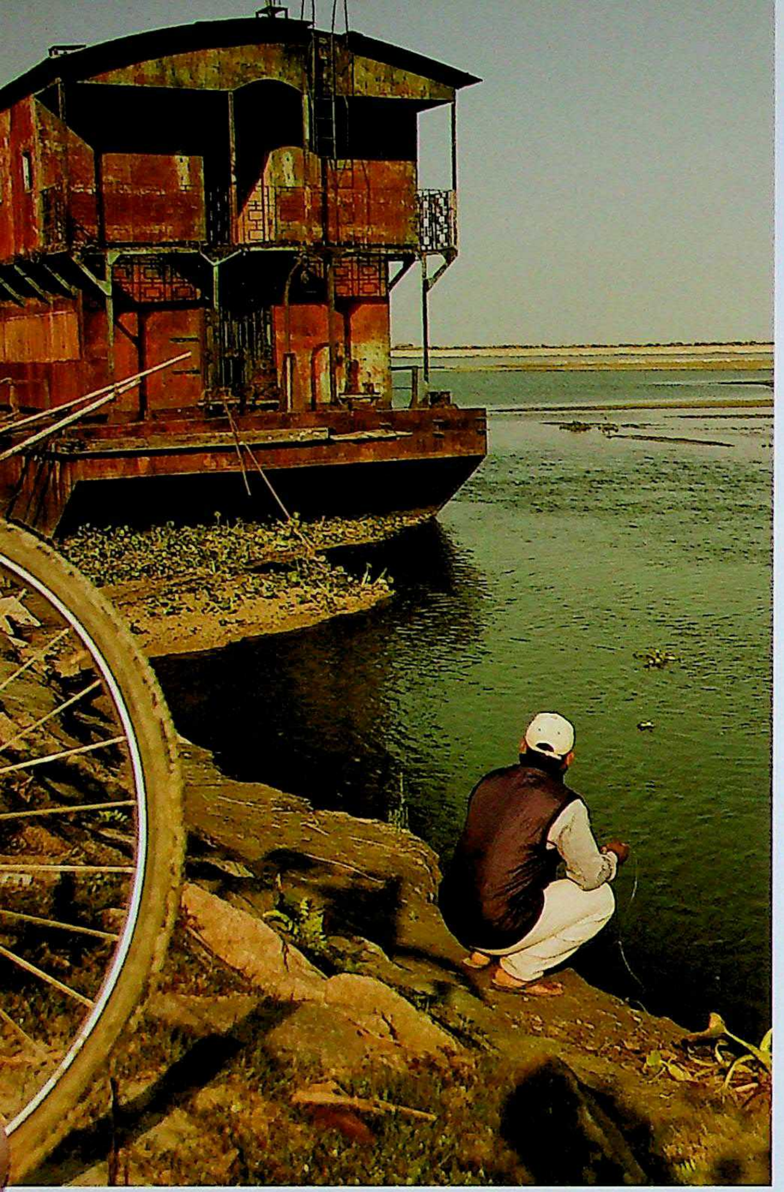
A cane bridge over a minor tributary of the Brahmaputra near Hajo, Assam.



southeastern Tibet) they continue their tortuous journey through impossibly deep gorges before turning south towards India. After a gradual descent, the tributaries enter the remote northeastern state of Arunachal Pradesh as the Dibang, Siang and Lohit rivers, which finally merge in the Assam Valley to form the Brahmaputra River.

On entering Assam, the Brahmaputra becomes braided. The river and its numerous tributaries form the massive flood plains of the Brahmaputra Valley, where the span of the river can reach almost 20 km, making it one of the widest rivers on the planet. Between Dibrugarh and Lakhimpur, the river splits into two separate channels—the northern Kherxhutia and the southern Brahmaputra. These two channels merge 100 km downstream encircling Majuli, one of the largest freshwater islands in the world.

During the monsoon when the Brahmaputra is in spate, it appears as a ceaseless expanse. Between June and October, floods are a common occurrence. Deforestation of the Brahmaputra watershed has resulted in soil erosion, increasing the probability of flash floods. The normally clear water becomes a swirling mass, coloured red by the topsoil which is deposited in the fertile delta during its final journey. Locals associate the colour with a popular legend. According to the Puranas, the mighty Brahmaputra and the region around it was called 'Lauhitya' or the 'river of blood'. It is believed that the Hindu sage Parasurama washed his bloody axe in these waters after committing matricide, staining it eternally.



A fisherman waits patiently for a catch, in Dibrugarh.

Top right: *Fish market in Roing, Upper Arunachal Pradesh.*

Periodic flooding, which helps replenish the fertile soil of the river valley is also responsible for great misery. But when the roads along the river are rendered un-motorable, the river highway of the Brahmaputra provides a welcome respite to the besieged people of the valley. The people in the Brahmaputra valley are used to this endless cycle of destruction and resurrection and have adapted well!

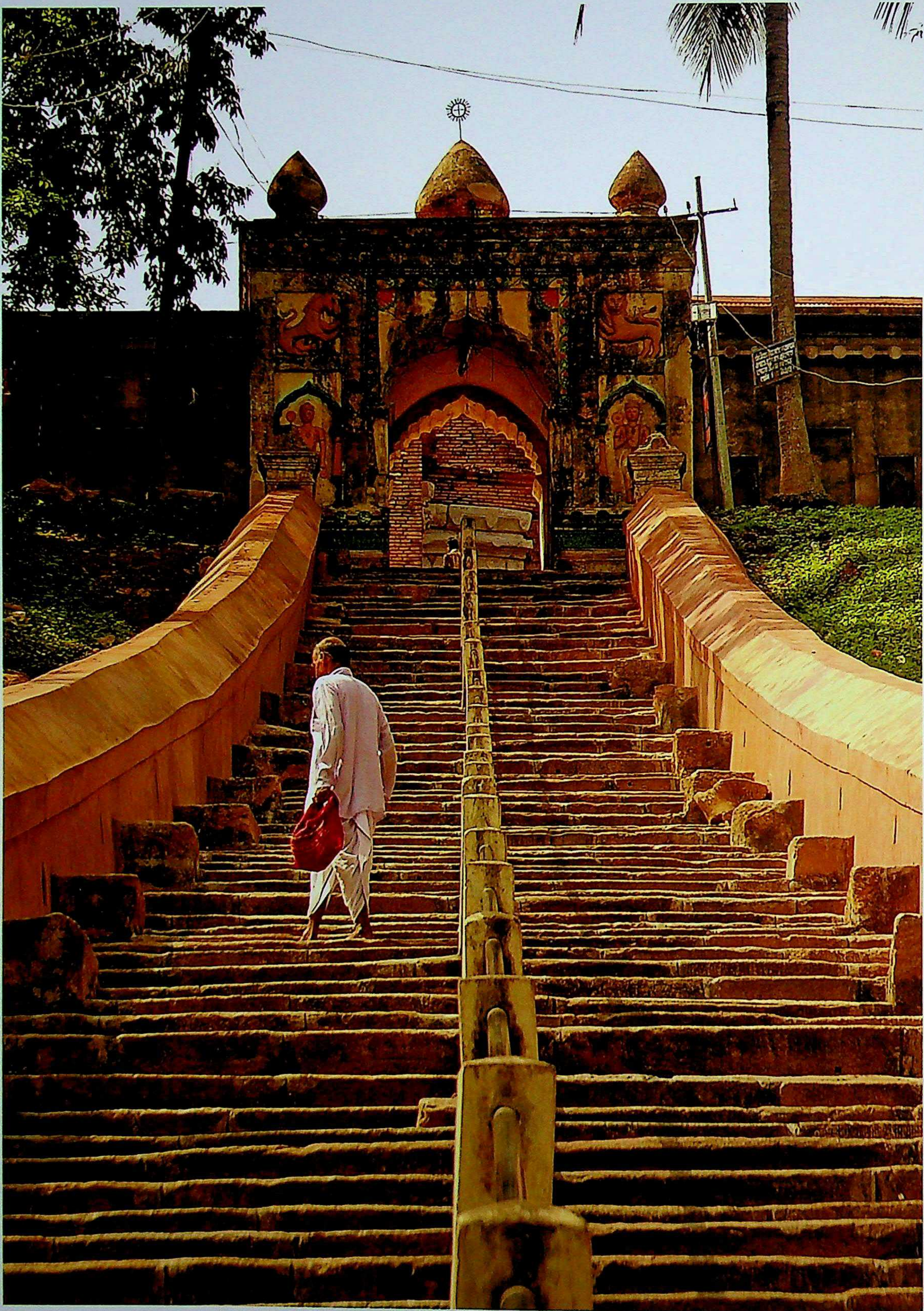
The boat is an emblematic representation of the river peoples' endless struggle against the elements. During the warm and wet months, when entire villages are marooned, the Brahmaputra (navigable for almost 1,285 km upstream) allows vital supplies to be transported. The floating river ports on the Brahmaputra are characteristic to this region. Every manmade structure on the river, which includes markets and restaurants, is supported by barges to account for large variations in tidal levels.

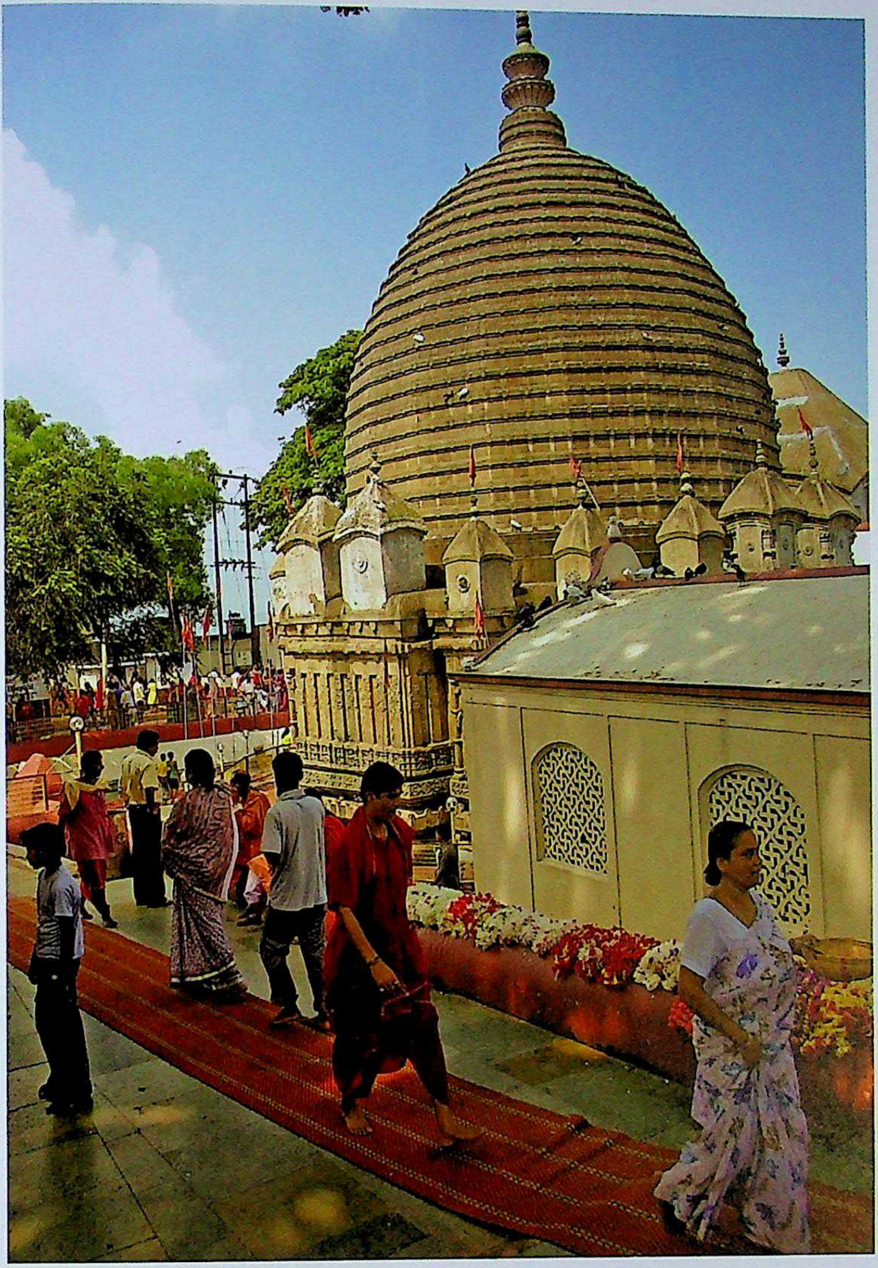
Surprisingly, for a river with such great religious and mythological significance, there are very few centres of pilgrimage

Sunset over the Brahmaputra, Guwahati.

along its banks. Parasuramkund on the Lohit River, (one of the tributaries of the Brahmaputra) is associated with the warrior sage Parasurama. It attracts millions of devotees who congregate here during the Hindu festival of Makar Sankranti (mid-January) when a big fair is held. Prior to the devastating earthquake which struck the region in 1950, Parasuramkund (or Brahmakund) was almost ringed in by a rocky wall that gave it the appearance of a small lake. The earthquake destroyed this natural dam and today the mighty river roars past a rickety bamboo fence that protects the pilgrims from the might of Brahma's son.

Guwahati, in the river's middle course has numerous hill shrines, the most important being the 16th century Kamakhya Temple that is dedicated to the mother goddess and her various incarnates. This is the seat of tantric worship in northeast India and the day usually begins with animal sacrifices to appease Kali, a Hindu goddess associated with eternal energy. Hajo, 24 km from Guwahati is the best example of the Brahmaputra's multi-religious



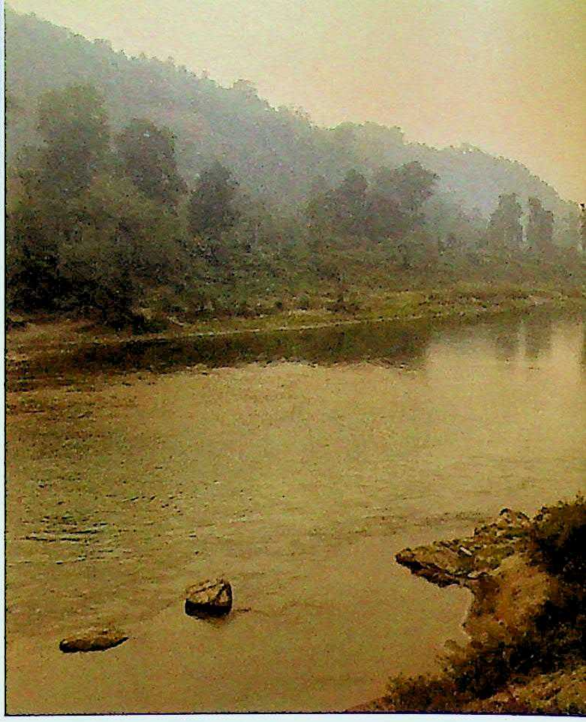


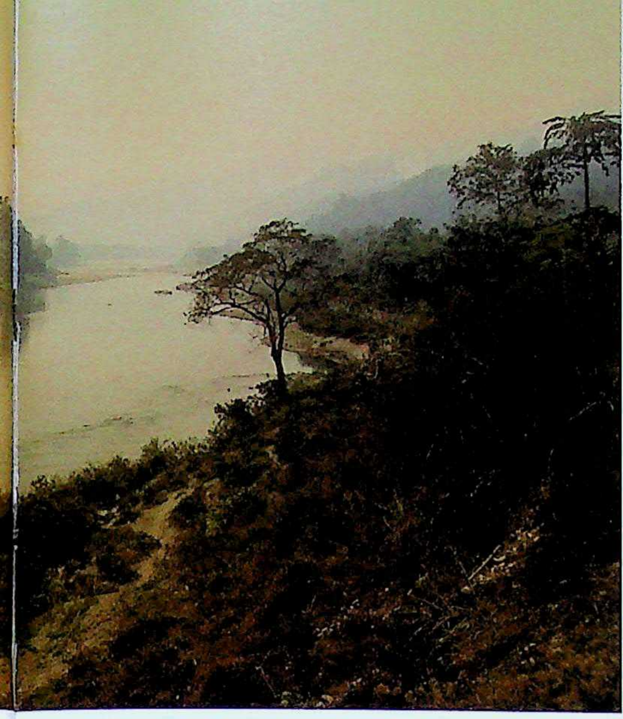
The Kamakhya Temple in Guwahati is the nerve centre of tantric worship in the east.

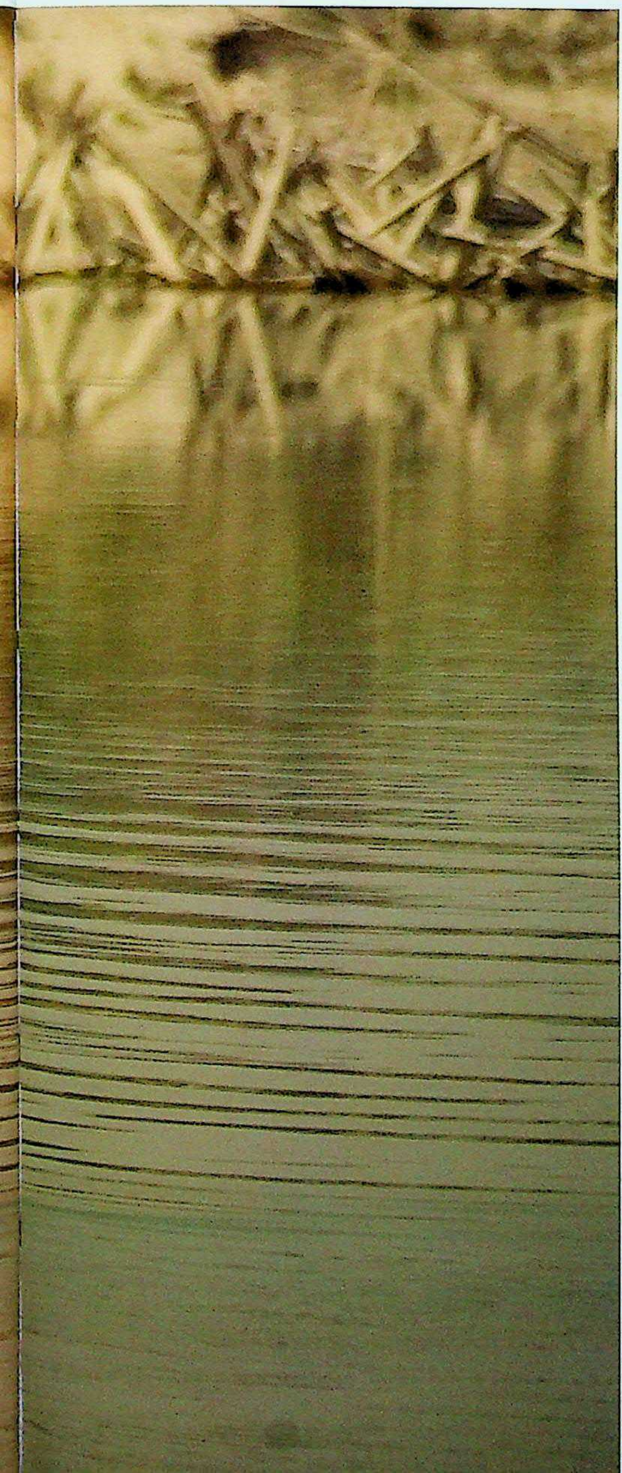
Facing page: *The quaint village of Hajo bridges three faiths: Hinduism, Buddhism and Islam.*

makeup. This ancient pilgrimage centre caters to the spiritual needs of three religions: Hinduism, Buddhism and Islam. Just off Guwahati lies Peacock Island. On this stunted hillock in the middle of the Brahmaputra stands the 16th century Umananda Temple dedicated to Shiva and his consort Uma. The temple is not the only attraction here; the island has a resident troop of Golden Langurs who enjoy the company of human beings.

Majuli near Jorhat was the centre of the Neo-Vaishnavite movement. Until the 15th century, most people in Assam belonged to non-Aryan tribes who believed in animism and nature worship. Even in an organized religion like Hinduism, caste hierarchy encouraged violence and disunity. Since the 12th century, an experimental social reformist movement was making inroads







Clockwise from top left:
A fisherwoman casts her net in the shallows at Palashbari, Assam.

The Siang River flows past Tuting, Arunachal Pradesh.

A solitary fisherman balances expertly on his boat off Majuli Island, Assam.

across the country and slowly gaining acceptance. The Bhakti sect was born from Hinduism, but it was based on the liberal doctrine of Bhakti, or devotion. This movement gave birth to new ideas, even new faiths, and the Neo-Vaishnavite movement was born out of this experiment. In Assam, the proliferation of this movement is generally attributed to the social reformer and writer Srimanta Sankardeva. In the latter part of the 15th century, he ushered in a socio-cultural renaissance. Humanist in content and popular in form, it was incorporated in literature as well as the arts. This tradition still survives on the island of Majuli. Of the 46 major *satras* only 26 remain today, most of which date back to the 16th century.

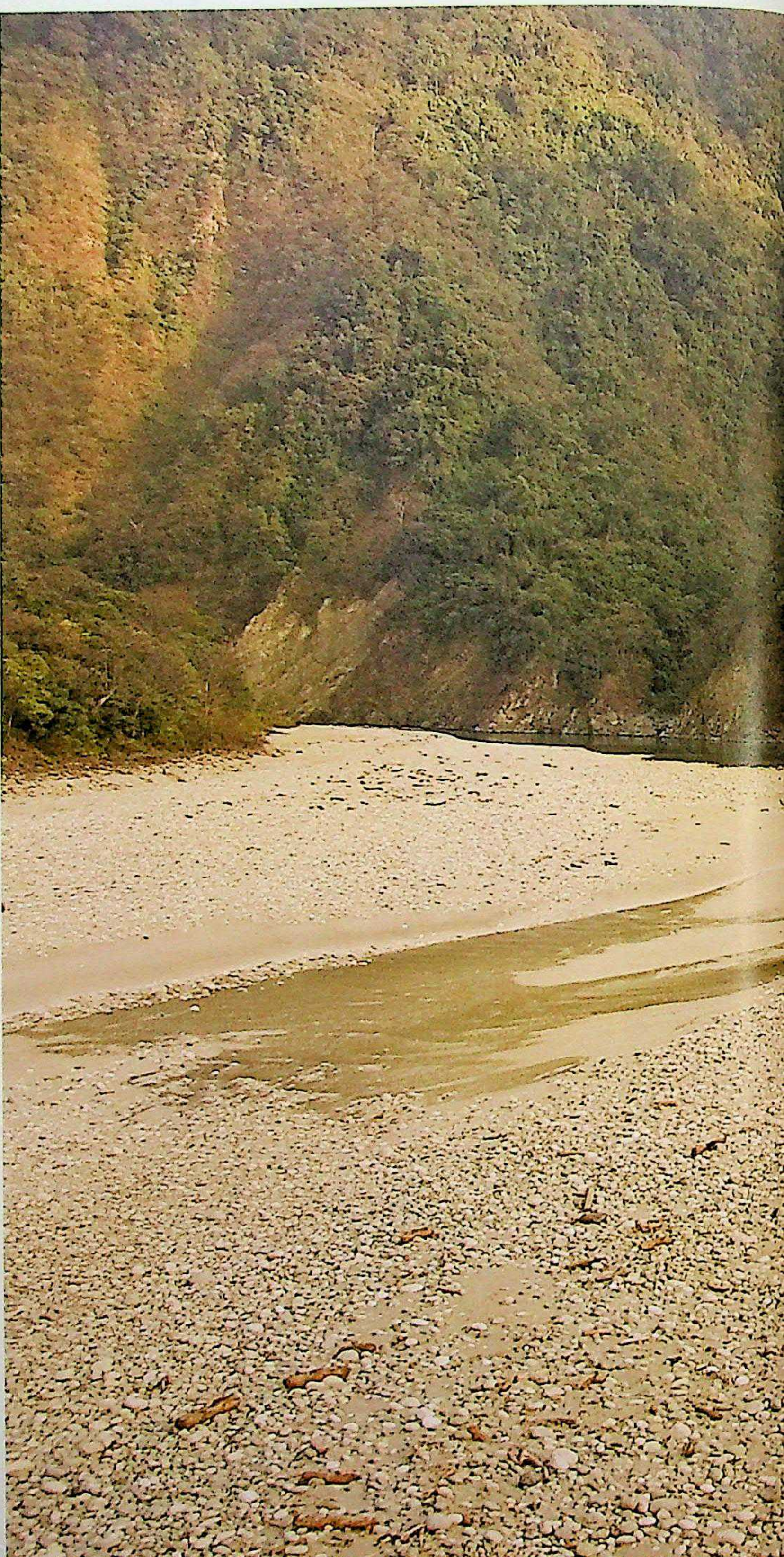
Today, many islands and villages along the Brahmaputra face extinction, but the river that has a reputation for being destructive also creates new landmasses. The landscape here is in a constant state of change. In unorganized settlements along the Sunderbans where the delta is vast, this does not seem to matter. People are nomadic and well-attuned to this predicament. Every monsoon, they shift their temporary residence and are constantly on the move, much like the river. But in an organized settlement like Majuli which has been shrinking continuously due to soil erosion, the socio-economic problem of resettlement becomes acute. The erratic nature of the river is best seen downstream, in Palashbari, approximately 30 km from Guwahati.

India is a country where the monsoon is normally associated with joy and celebration, but for the people of Palashbari, this is a season of sorrow. Every year, the river swallows a few kilometres of land here, while depositing silt on the opposite bank. Many residents have lost their agricultural land and have been forced to migrate to urban areas in search of work due to this crisis.

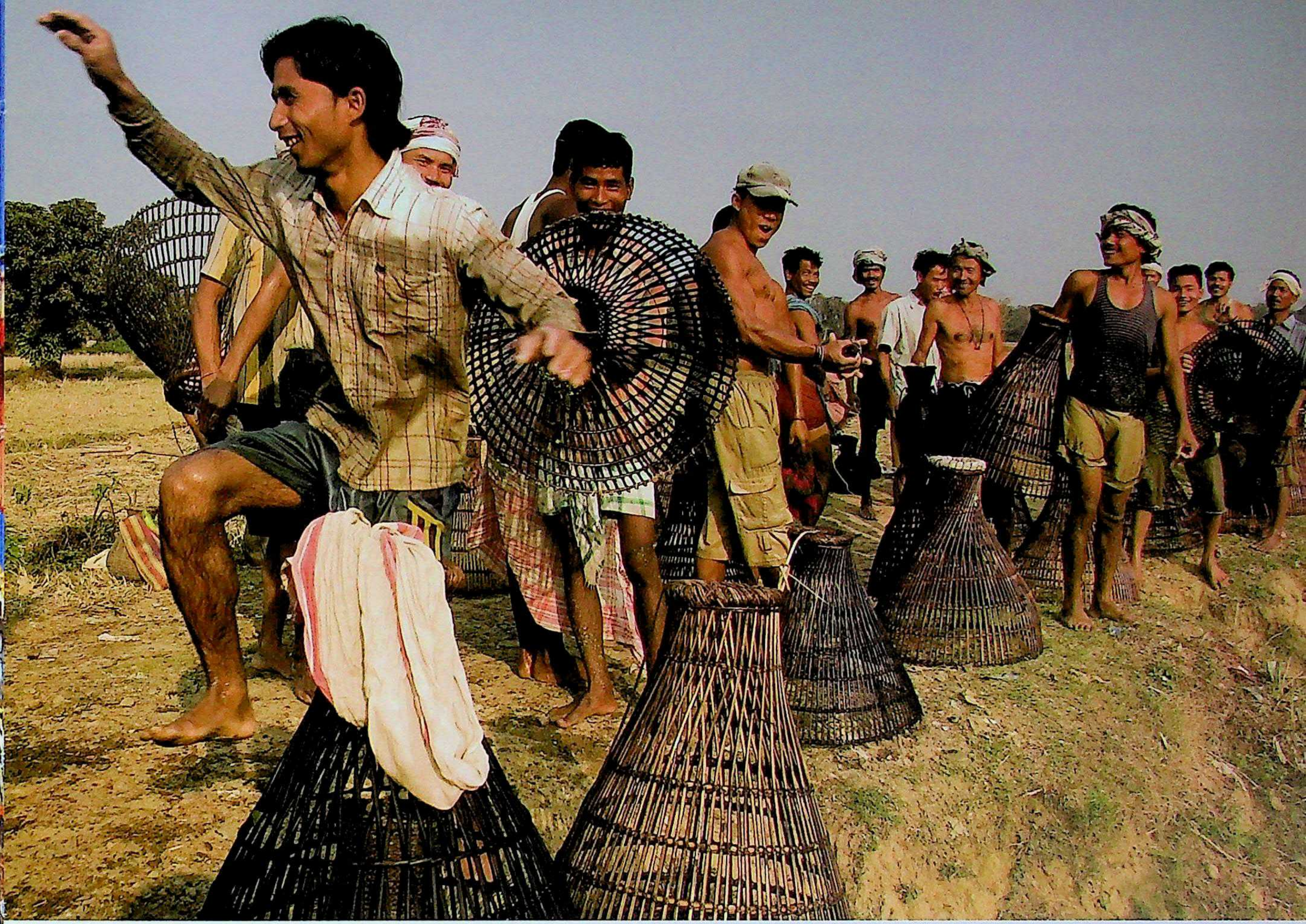
Floods and Flood Plains

A flood is a consequence of many factors. The vagaries of nature and human avarice are equally responsible for the devastation caused by floods. In theory, flooding occurs when the volume of water within a water body exceeds the carrying capacity of its channel. When the embankment is inundated with this excessive volume of water, it cannot contain the flow and the resultant runoff flows into the surrounding areas. The devastation caused by floods depends on topography and the volume of overflow. The low-lying deltaic region of eastern India and Bangladesh are the most flood prone areas in the world. India accounts for one-fifth of the global death toll due to floods and on an average, about thirty million people are evacuated from the flood plains along the Bay of Bengal every year.

While floods cause immense destruction, they also deposit fertile soil in the lower reaches of the river. The deltas, which form due the bifurcation of river channels are the most fertile zones of a country and support the densest levels of population. In India, rivers like the Ganges and the Brahmaputra have the most extensive flood plains.



The meandering Lohit in front of a mountainous backdrop at Parasuram Kund.



Fishermen with their polo fishing gear off Nimati Ghat, Assam. Polo is a rather curious form of fishing, involving a great amount of speed and accuracy. Fishermen stand in the shallows of the river and trap passing catfish in the specially designed cane baskets.

Facing page
Top: *Crossing the river near Sonari Ghat, North Lakhimpur, Assam.*
Bottom: *Approaching the banks near Pasi Ghat, Arunachal Pradesh.*

Migration is very visible in cities like Tezpur, Guwahati and Jorhat where the movement from rural areas has led to an acute strain on infrastructure.

The Brahmaputra supports a vast ecosystem and the grasslands of Assam are famous for their wildlife, especially the iconic one-horned Rhinoceros that has been adopted as the state symbol. Goalpara and Kaziranga are two of Assam's most famous wildlife sanctuaries. From Goalpara, the river meanders west towards Dhubri where it enters Bangladesh. This town is famous for its bamboo trade and floating markets. Traders from Meghalaya and Arunachal Pradesh float down the river on bamboo rafts, which they dismantle and sell here. Hundreds of these rafts tied along the river's edge create beautiful abstract patterns.

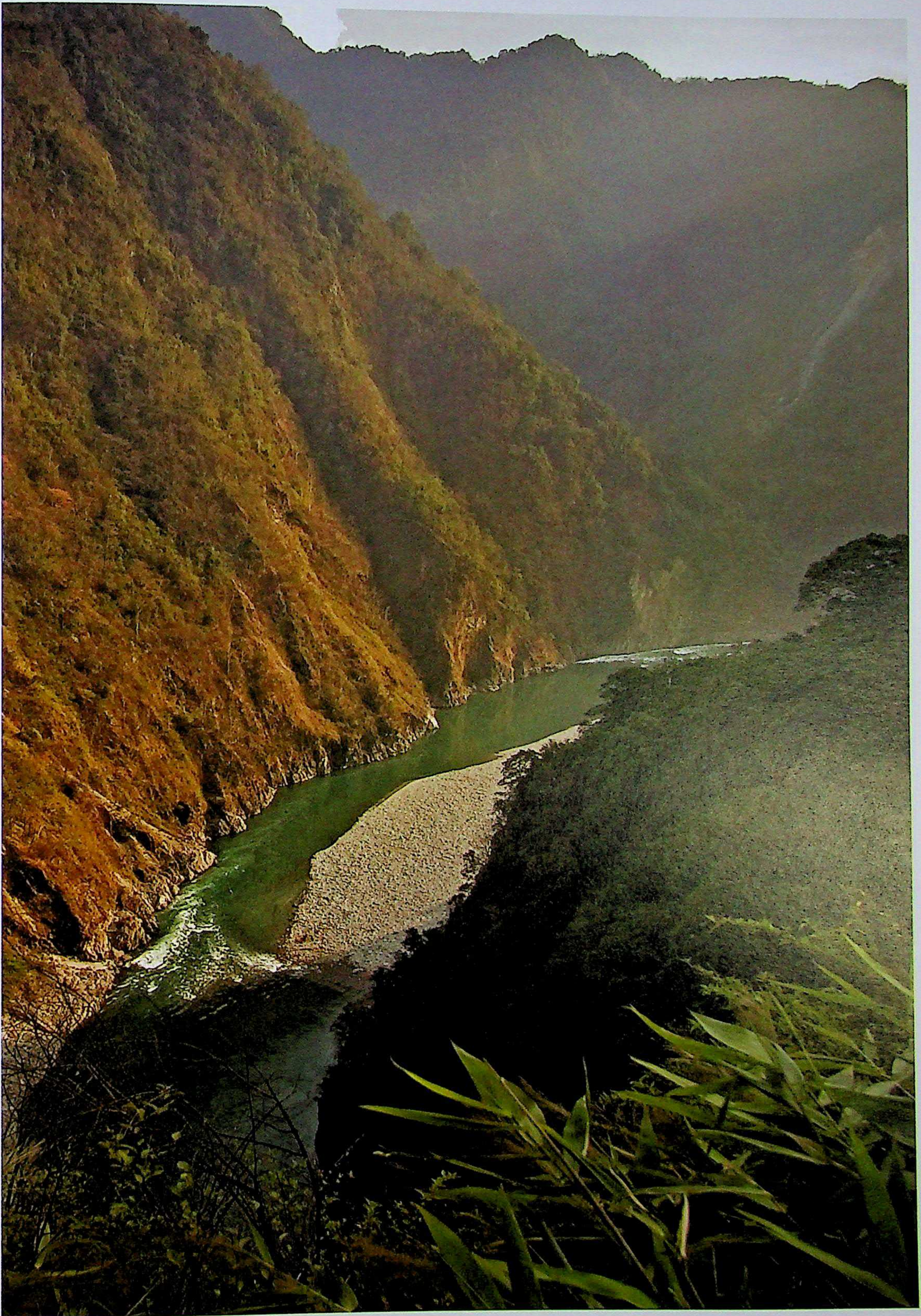
The broad river then splits into two channels; the main stream called the Jamuna in Bangladesh, joins the Padma arm of the Ganges. Together, they eventually join the Ganges and Meghna rivers and their numerous distributaries to form the largest and the most fertile delta in the world, before flowing into the Bay of

Situated on the bank of the river Brahmaputra, about 35 km from Guwahati, Sualkuchi is known as the Manchester of the East. The silk weaving tradition in this hamlet can be traced to the 11th century when King Dharma Pal, of the Pala dynasty, encouraged the craft and brought 26 weaver families from Tantikuchi to Saulkuchi.

Facing page: *In Arunachal Pradesh, the Siang River enters India through impossibly deep gorges.*

Bengal. The mangrove forests of the Sunderbans are home to a host of endangered species. It is also the last realm of the elusive Bengal Tiger. Rising sea levels due to global warming pose a major threat to the ecosystem of the region and many islands are now partially submerged. The floodplains are extensively cultivated both in India and Bangladesh. Other than agriculture, fishing plays an important role in the economy of both the countries.

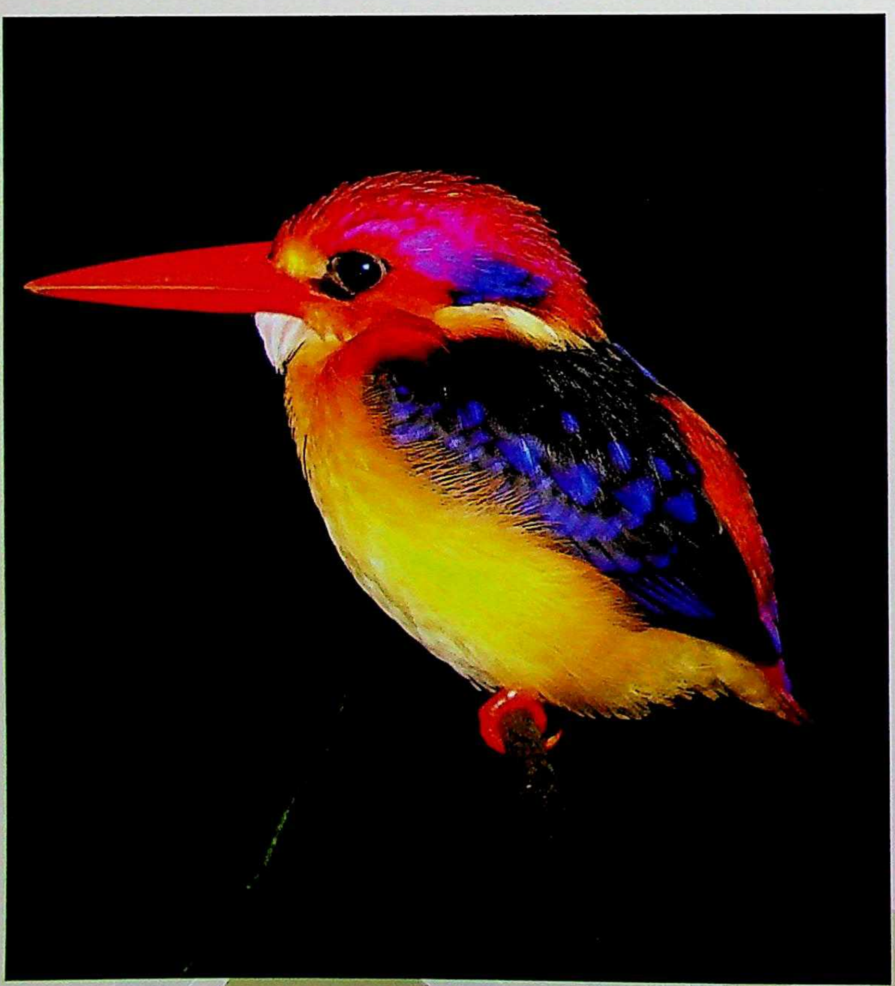
In the past, the Brahmaputra was largely isolated from pollution, but that is changing today. A growing population and accelerated industrialization have overwhelmed the river, increasing the threat to human health, as well as endangering many other species.

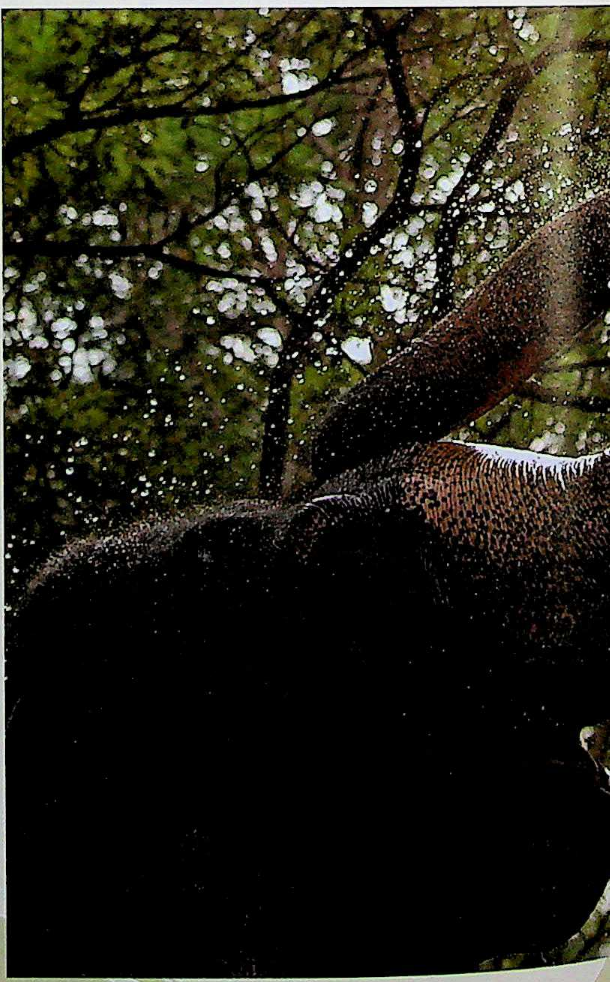


Flora and Fauna

Human beings are perhaps the first species to be prolific enough to have actually threatened their own existence by destroying the very ecosystem that supports them. The importance of rivers as a source of potable water is apparent; so is the fact that most of them are so polluted that they can barely sustain life.

While the effect of river pollution on human beings has become apparent in the last few decades, the principal sufferers are the many living organisms that call the river their home. Today, several categories of fish are either extinct or endangered. The Gharial, which has been in existence for many hundreds of years, was once found in virtually every northern river system. Its range extended from the Indus in Pakistan to the Irrawaddy in Burma. However, this has now shrunk to a few small stretches in Northern India. The Mugger or Marsh crocodile that can grow up to a length of 18 feet once thrived in the Indian rivers. However, unregulated hunting in the 19th century brought the entire population to the brink of extinction. By the 1970's, awareness of the plight of crocodiles fuelled conservation efforts and partially revived their numbers in the wild. Habitat destruction is the main threat

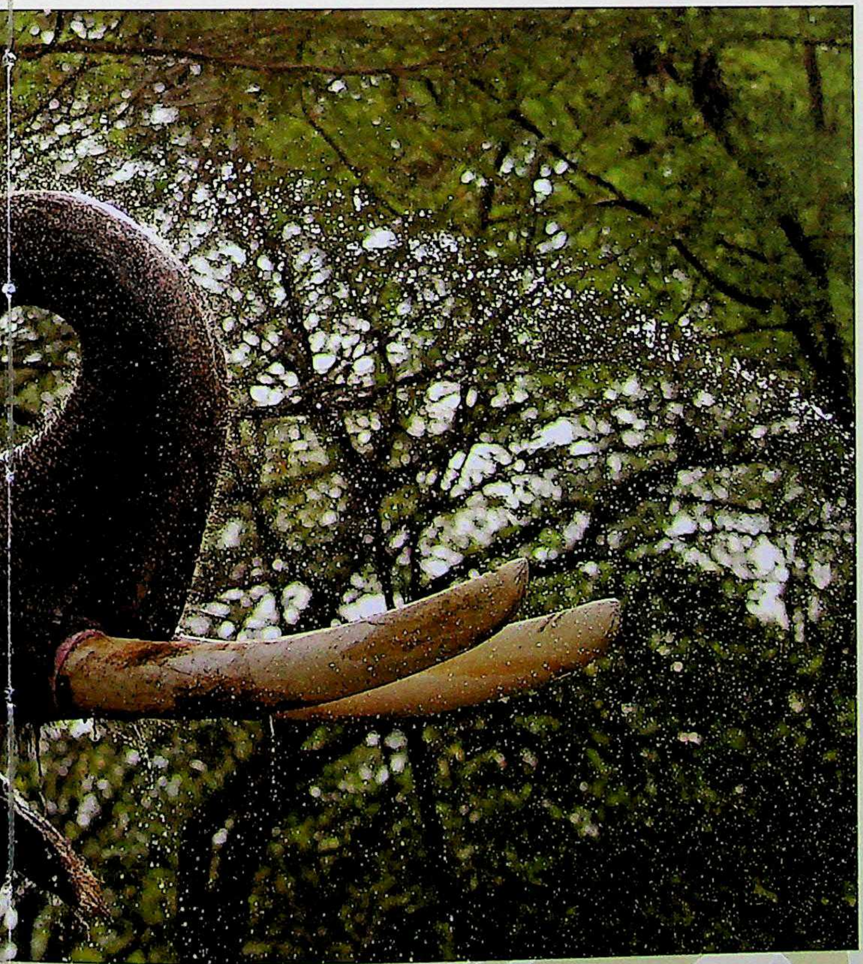


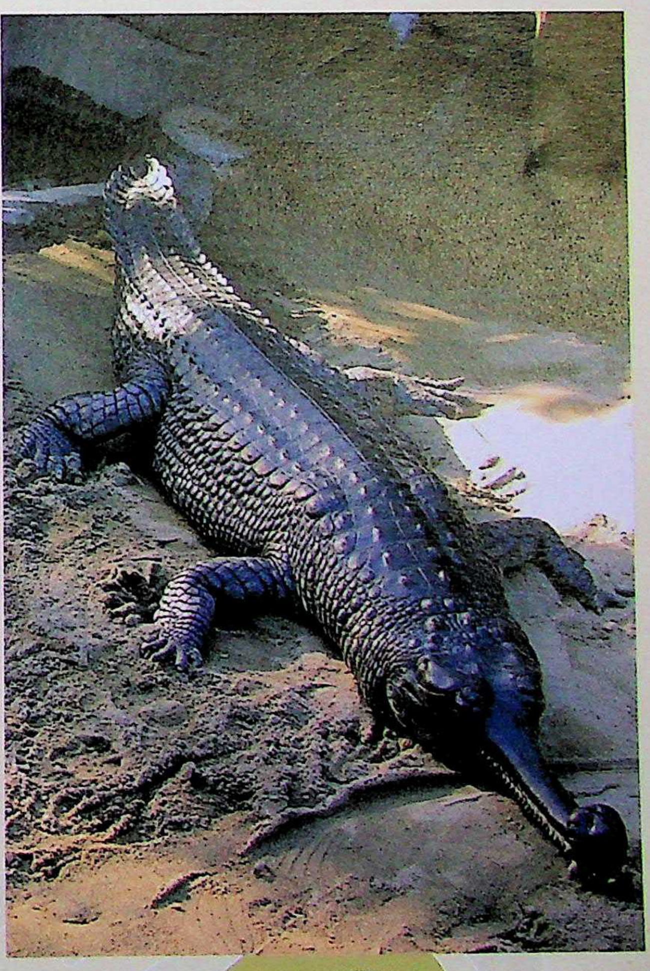


causing a 20 percent decline in numbers, and today the species is considered vulnerable.

One of the rarest and most endangered mammals on earth can also be found in India's rivers. The Ganges River Dolphin is India's National Aquatic Animal. It is primarily found in the Ganges, the Brahmaputra, and their tributaries in India, Bangladesh and Nepal. These fascinating mammals, which are almost blind, hunt and navigate by the use of echolocation. They have been adversely affected by human use of the river systems. Entanglement in fishing nets cause significant damage to their numbers. In spite of their endangered status, many dolphins are still trapped each year for their oil and meat, which are used as liniment, aphrodisiac and bait for catfish. Large dams and irrigation canals have lowered water levels in the main river systems throughout India. Perhaps the most significant issue is that the dams result in the segregation of dolphin population and a narrowed gene pool in which dolphins can breed. Poisoning of the water supply from industrial and agricultural chemicals has also contributed to their decline. There are currently only three sub-species of river dolphins considered capable of long-term survival, if protected.

The Ganges Shark is another rare inhabitant of the Gangetic river system. It is largely restricted to the rivers of Eastern and Northeastern India, particularly the Hooghly in West Bengal, the Ganges, Brahmaputra, and the Mahanadi in Orissa. Bengalis call it Baagh Maach, which translates into tiger fish. It is typically found in the mid to lower reaches of a river. Although very little is known about these elusive sharks, they are believed to be scavengers. Most of the Eastern and Northeastern Indian rivers are prone to flooding,

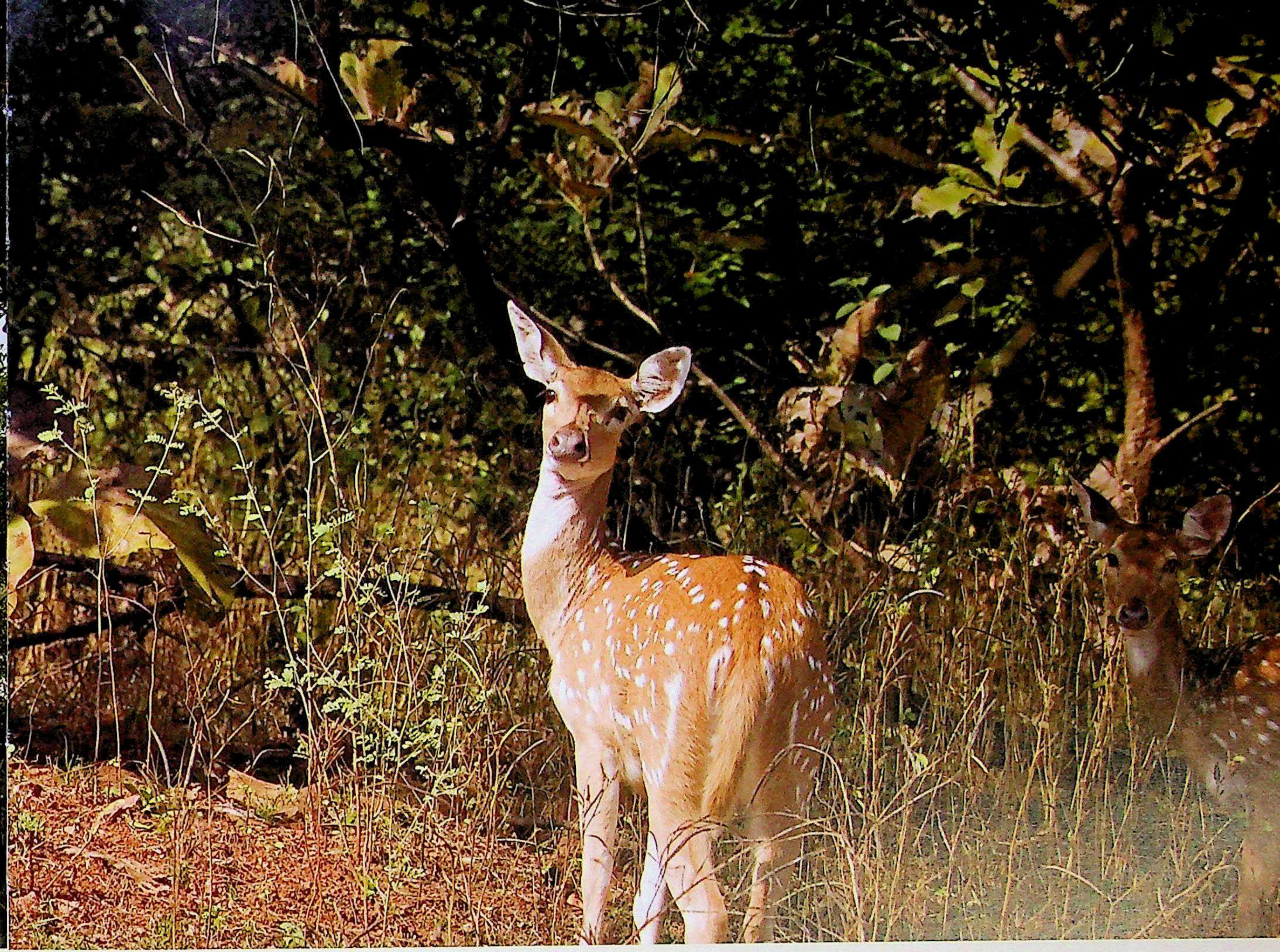




which causes widespread loss of animal and human lives. These sharks scavenge the carcasses and help keep the river clean, and are thus a vital part of the river's ecosystem. Like the freshwater shark, turtles too play an important scavenging role. In fact, hundreds of Snapping Turtles were released into the Gangetic river system in the recent past in an attempt to clean it.

Although the fish populations have declined steadily over the years due to overfishing and pollution, the Indian river systems still support a passive fishing industry. The famed Hilsa and Tangra (catfish) that are a quintessential part of Bengali cuisine are bred mostly in fish farms today. Similarly, the reduction in the numbers of other economically important fish like Carp and fresh water shrimp has also been observed. However, the upper reaches of the trans-Himalayan region continue to support a healthy population of at least 218 species of fish. The most important among these are Mahseer, Silver Carp, Salmon, Tortor, and Brown Trout. Although many organisms are restricted to the fresh water in rivers, some, such as Salmon and Hilsa, can also adapt to seawater.

Other than sustaining their own ecosystem, rivers are also responsible for draining large tracts of land and nurturing forests and grasslands. The Western Ghats that form one of the three principal watersheds of India is among the world's ten most important biodiversity hotspots and shelters over 5000 varieties of



flowering plants, 508 avian species, and over 150 species of mammals and amphibians. At least 325 globally threatened species are found here. Similarly, the Brahmaputra nourishes the grasslands of Assam, which is home to another endangered mammal—the one-horned Indian Rhinoceros. For its size, the Kaziranga National Park supports the highest density of tigers in the world as well as significant herds of Elephant, Rhinoceros, and Swamp Deer.

Although mangrove forests are not part of a river system, they are found in the riverine deltas. India has some of the densest mangrove forests in the world, especially in the Ganges-Brahmaputra delta region. The Sunderbans is part of the vast Gangetic delta that stretches from West Bengal to the east coast of Bangladesh. In India, the Sunderbans encompass an almost impenetrable mangrove forest covering 4264 sq km. This area is one of the most fragile ecosystems on earth and supports some of the world's most endangered species. It is the last refuge of the Royal Bengal Tiger and the estuarine crocodile. Today, poaching and global warming are its biggest threats.

Today, the ecology of the river and the secondary ecosystems it supports are under serious threat. If urgent steps are not taken to stem ecological degradation, our rivers may not be able to sustain any life in the future.

बनारस साड़ी फैक्ट्री यहाँ कमीशन नहीं दिया जाता है
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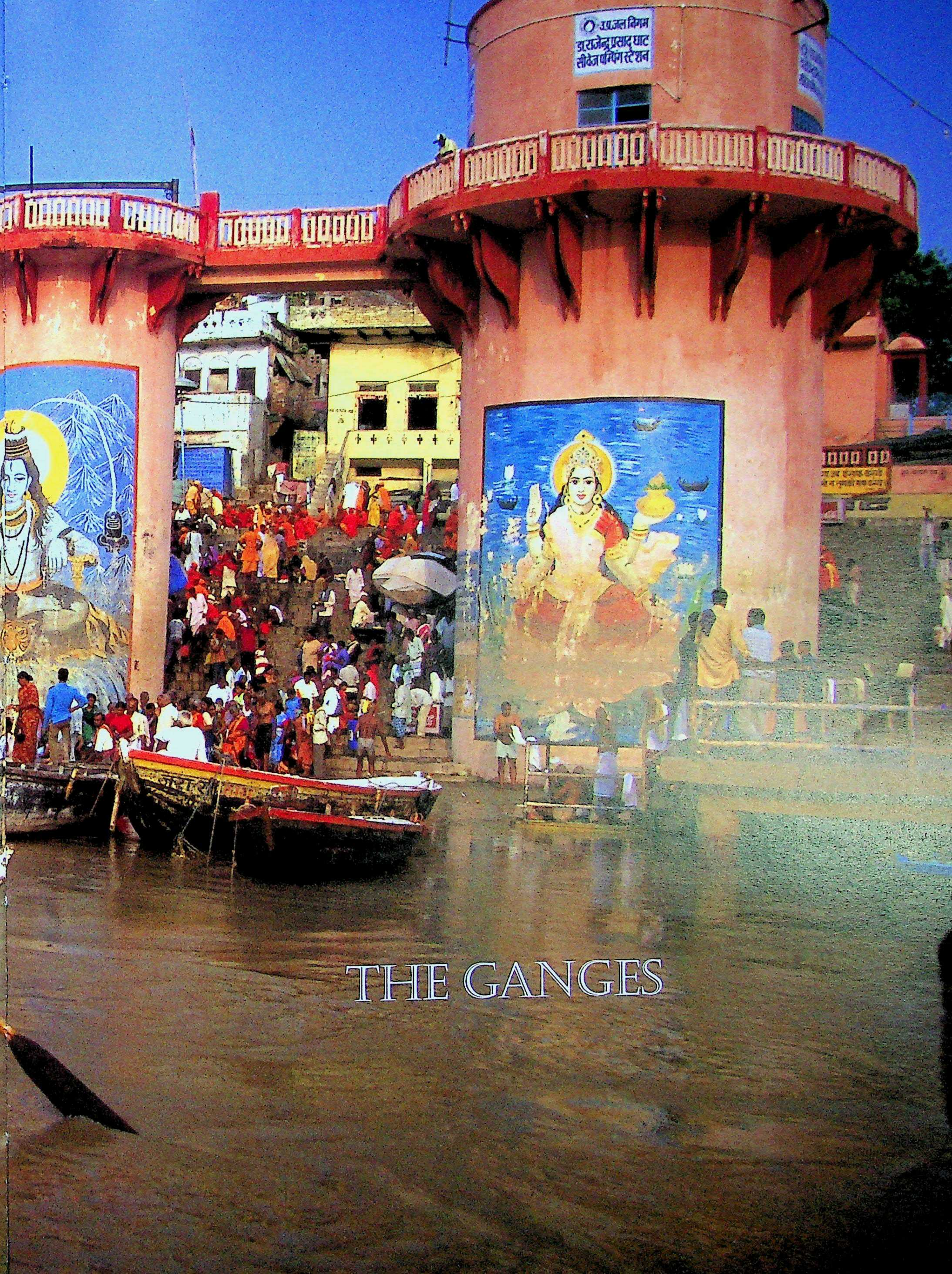
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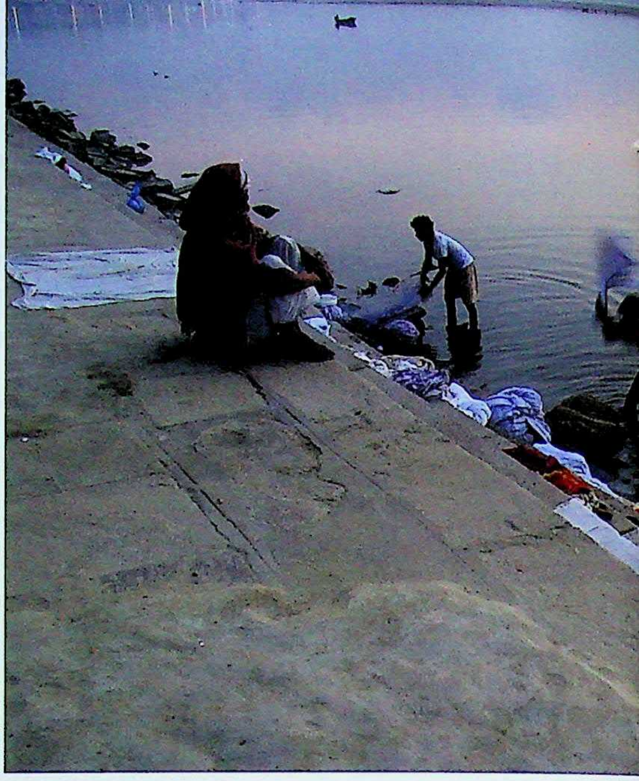
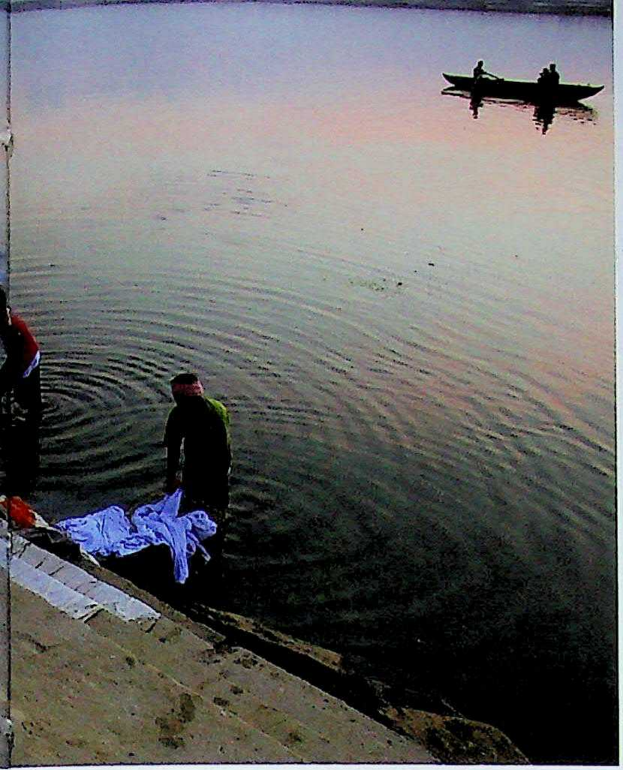
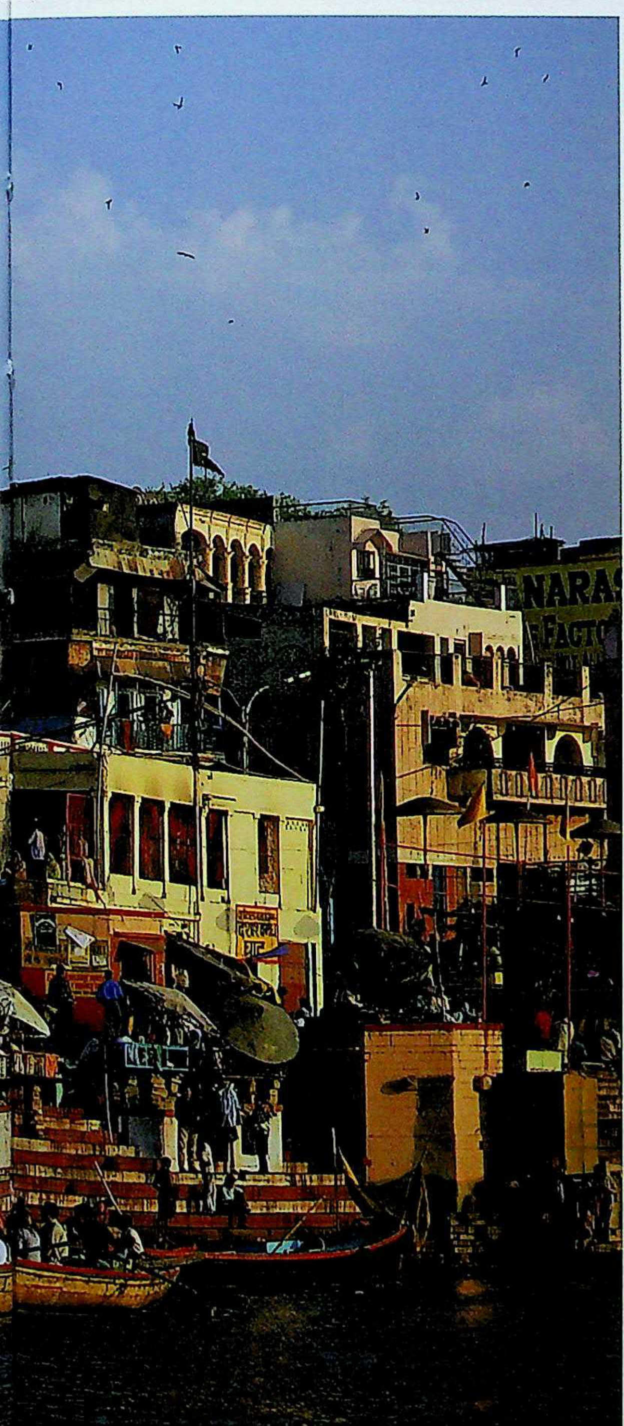
THE GANGES







Clockwise from top left:
Varanasi at dusk.

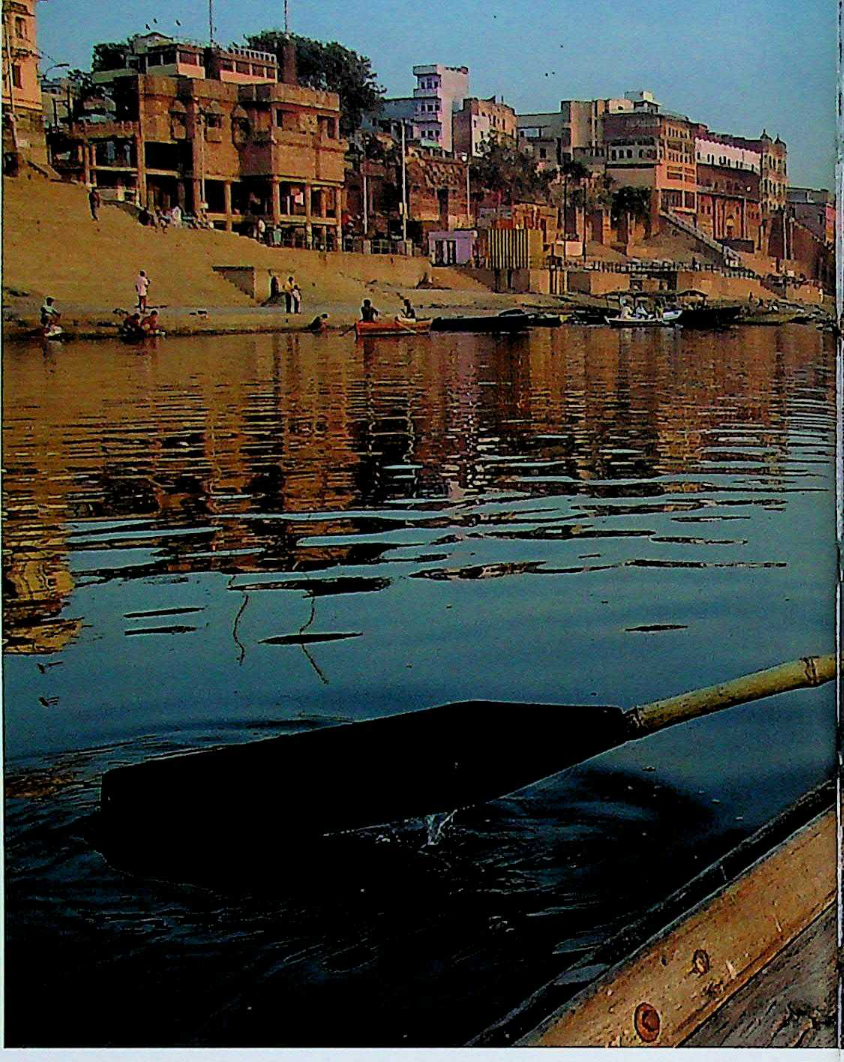
In Varanasi, washermen at work at the Dhobi Ghat lash clothes vigorously on the stone steps.

A typical view of Varanasi. The Chattris *(straw umbrellas) that shelter astrologers, pundits and their clients are a characteristic feature of this holy town.*

Pages 44-45: *The bustling Dashashwamedh Ghat at Varanasi.*

The Ganges has the indisputable reputation of being India's holiest river. India is the birthplace of Hinduism and the river provides the elixir for the undying devotion of many generations of Hindus. Over many millennia, pilgrims have subscribed to the belief that bathing in the Ganges absolves sin and circumvents the process of rebirth.

The Puranas include many tales about the Ganges and its origins. King Shantanu, an ancestor of the Pandavas (heroes of the *Mahabharata*) chanced upon Ganga in her mortal form. Smitten by her beauty, he instantly asked for her hand in marriage. The river goddess agreed, but put forth a condition: Shantanu could never question her actions, however abhorrent they might seem. If he did, she would be compelled to leave him. The king and his queen lived happily together and soon a son was born to them. But to Shantanu's horror, Ganga carried him to the river and drowned him. Shantanu was aghast, but did not intervene until the same fate befell six more of his children. When the eighth child was born, the grief-stricken king could not contain himself any longer and demanded an explanation. Before Ganga left him, she identified herself and told the king that his sons were in fact



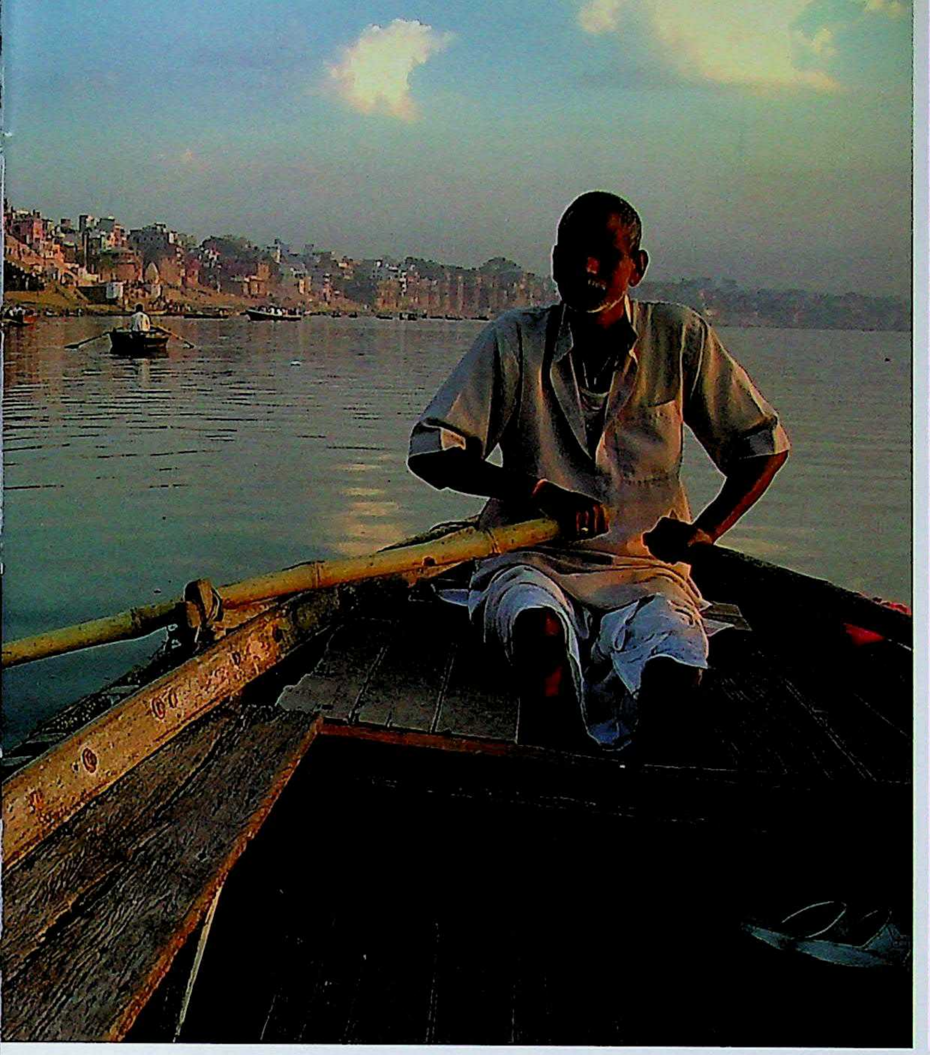
A man practices yoga on the stone steps of the Manikarnika Ghat, in Varanasi, while another does his washing.

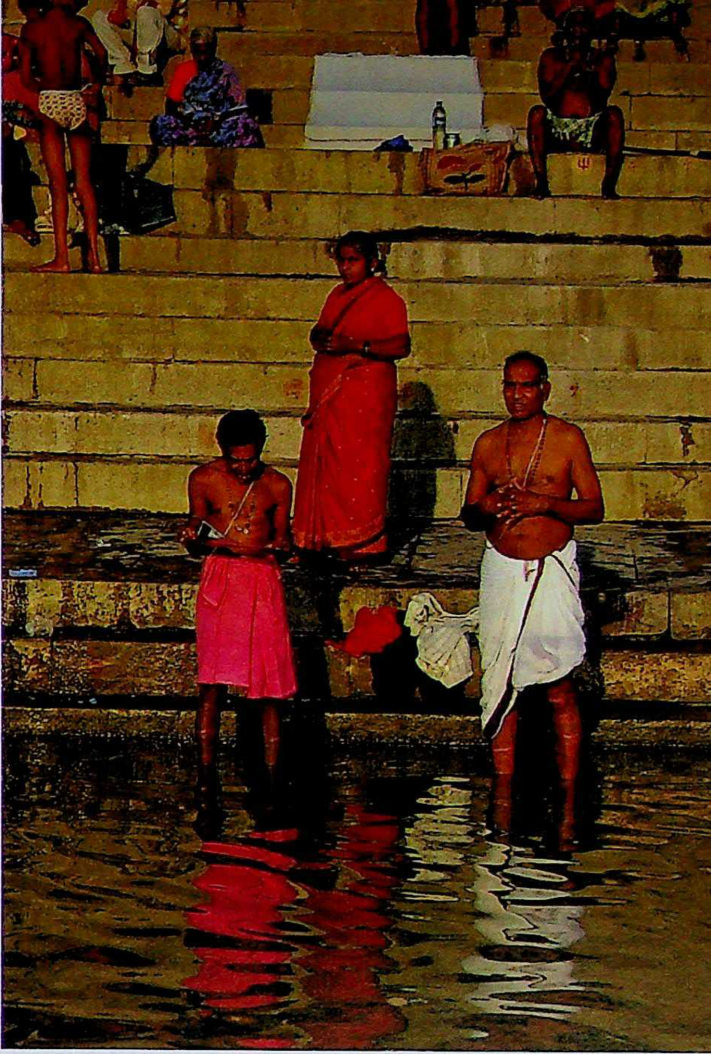
Centre: *A boat man on the Ganges in Varanasi.*

Vasus (divine beings) who were born as mortals due to a curse. By drowning them, she had liberated their doomed souls. As her action was interrupted, the eighth child would have to live as a mortal on earth. She then decided to take their surviving son Devavrata with a promise that he would return to Shantanu as heir apparent at the age of sixteen. This child, who later came to be known as Bhishma, played a pivotal role in the *Mahabharata*.

The most popular legend about Ganga's origin revolves around King Sagar, his sixty thousand sons and his sympathetic scion Bhagiratha. King Sagar who ruled Ayodhya was an ancestor of Rama, protagonist of the Hindu epic *Ramayana*. He is believed to have successfully performed the Ashwamedha Yajna (horse sacrifice) ninety-nine times.

Indra, the king of gods was envious of King Sagar's success. Using his magical powers, he stole the sacrificial stallion and hid it in the hermitage of Kapil Muni. The sage who was in a meditative trance was oblivious to this plot. The sixty-thousand sons of Sagar managed to trace the horse and holding the sage responsible for the abduction, assaulted him. The enraged sage consigned the princes to ashes with his angry glare.





Pilgrims taking a holy dip in the Ganges.

Many years later, when King Bhagiratha learnt about the plight of his ancestors, he requested the sage to grant them salvation. Although the sage gave him a patient hearing, he regretted his inability to reverse the curse and suggested that Bhagiratha pray to Ganga, as only her touch could liberate their souls. The king observed a protracted penance in the fond hope that Brahma would let Ganga leave her heavenly abode and descend to earth. Pleased with his devotion, Brahma granted his wish, but warned him that only Shiva could sustain the power of her descent. Thus began another arduous penance by which the persuasive king managed to appease Shiva, who let Ganga flow through his matted locks as she descended to earth. When Ganga touched the ashes of Bhagiratha's ancestors, their souls were freed and they ascended to heaven singing his praises.

While Ganga's mythical descent is attributed to the prolonged penances of King Bhagiratha, her geographical birth that goes back at least 50 million years coincides with the formation of the Himalayas, where she starts her journey. High above the foothills of the western Himalayas, below the Swargarohini Range in Uttaranchal, a sinuous trail of rock and ice meanders slowly

The Gangotri Temple, which is the principal shrine of goddess Ganga, is one of the four sites in the Char Dham pilgrimage circuit. The quaint temple is dedicated to the legend of the goddess' descent.

Facing page: *A pilgrim crosses a minor stream of the Bhagirathi on a makeshift bridge.*

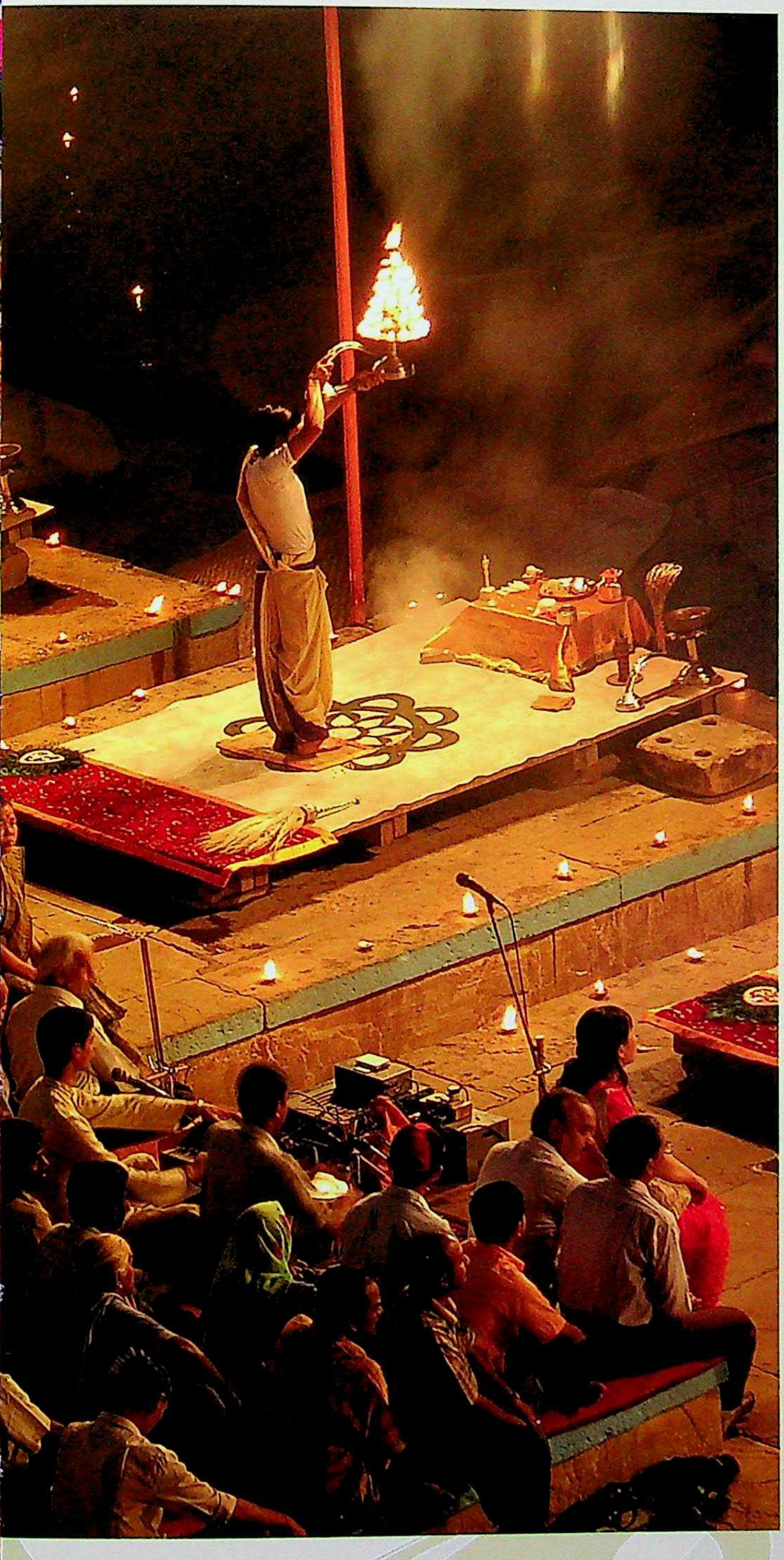
towards Gomukh, the glacial snout where the Ganga begins her earthly descent. However, this is not the solitary source. The alpine meadow of Tapovan above the Gangotri glacier has numerous feeder streams that join the glacial melt. At an altitude of almost 16,000 feet, the meadow supports an astonishing diversity of flora and fauna. Hundreds of Ibex and Ghural graze undisturbed here. This is also the domain of the elusive Snow Leopard. The fact that this region is inaccessible to most tourists has ensured its pristine habitat.

At its source, the river is known as Bhagirathi. It joins the Alaknanda River at Devaprayag to form the Ganges. From Gomukh, the river cuts through a deep gorge, progressively descending from an altitude of 15,000 feet to 10,000 feet before flowing past the town of Gangotri. Although many small streams drain into the Ganges, its six main tributaries and their five confluences have tremendous religious importance. The Alaknanda meets the Dhauliganga at Vishnuprayag; the Nandakini at Nandprayag; the Pindar at Karnaprayag; the Mandakini at Rudraprayag and finally the Bhagirathi at Devprayag to form the headwaters of the Ganges. The Bhagirathi that rises at Gomukh is the source stream of the Ganges and is its most important tributary.

The Ghats of Varanasi

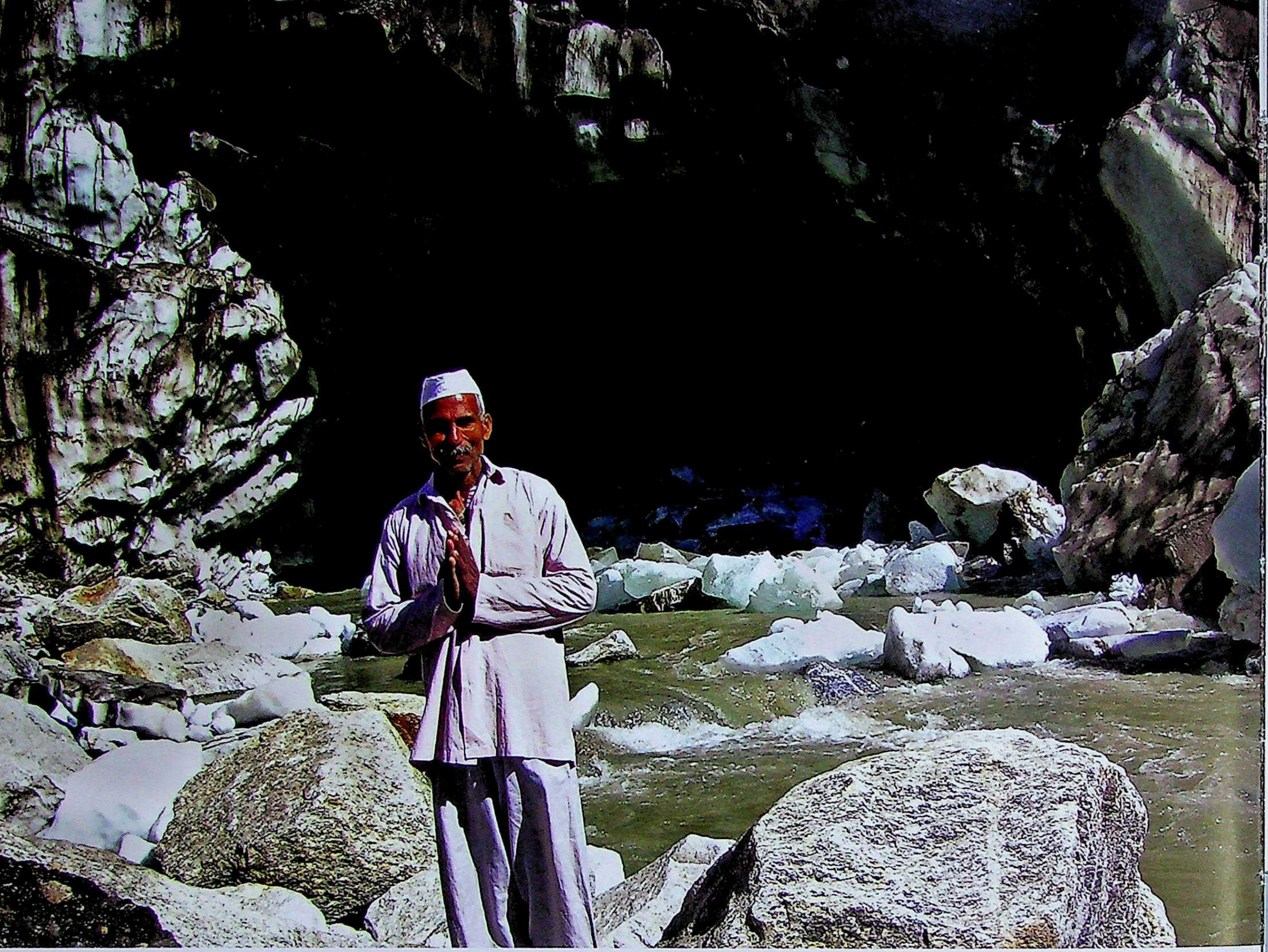
Below: *Ganga* aarti *being performed at the Dashashwamedh Ghat, Varanasi.*

Right: *Brass idol of a river deity. The crocodile mount is an attribute that is common to all river goddesses.*



The Ghats on the riverfront provide a backdrop for an unparalleled human drama that unfolds at the break of dawn involving thousands who come here to bathe. The silence of the waning night is shattered by hymns. Smoke from funeral pyres and incense sticks hangs about the air like an inescapable mantle. The pundit and pilgrim try to outwit each other, but the pundit always wins. Mimes walk past dressed as gods; the many Hanumans, Shivas and Ramas often squabble over territorial rights. When the sun hoists itself into the zenith, the ghats become quieter. The activities along them resume towards the end of day when the *aartis* commence. Electric lamps compete with the countless *diyas* that are set afloat in the Ganges. If the oil lamps manage to stay afloat, it is considered a good omen.

Musicians vie for attention and each group tries to drown the sounds of the other. The chants reach a crescendo and in a hypnotic trance, pilgrims sway to the music. Then as the reverberations fade, the crowd disperses and an aphotic hush descends on the ghats. The silence of the night is broken only by the occasional song of a boatman—the voice of the Ganges.



A pilgrim at the snout of the Gangotri Glacier in Gomukh.

In the 18th century, the Gorkha chieftain Amar Singh Thapa constructed a shrine dedicated to Ganga at Gangotri. Like any other centre of pilgrimage, the temple is the node around which a disorganized town has proliferated. Gangotri was connected to the plains by a fully-motorable road only a couple of decades ago; before this, pilgrims had to make a long and often dangerous trek to reach the shrine. A thunderous Bhagirathi snakes past the broken mountain landscape before entering a woefully narrow gorge known as Gaurikund. From here it begins its gradual descent into the plains. This is one of the four sites of the Char Dham pilgrimage circuit. Every year, thousands of pilgrims throng to the site between May and October. By November, Gangotri is covered with snow, and it is believed that the Goddess retreats to Mukhba, her winter abode (12 km downstream).

The next important town along the river, Uttarkashi is also the starting point for pilgrimages to the hill shrines of Uttaranchal.

Situated at an average elevation of 3800 ft, this picturesque town is sited along the edges of a ravine gouged out by the Bhagirathi. A possessed suspension bridge that sways, groans and trembles connects the two sides. The temples, bathing ghats and holy men are concentrated on the eastern bank of the river. The Bhagirathi that is relatively untainted in the mountains, gets its first taste of pollutants in Uttarkashi. While it is not very apparent from a distance, the sheer volume of garbage dumped along the river is horrifying. But the pilgrims do not seem to mind, and the civic authorities don't care and life along the ghats goes on as usual.

The Ganges flows past the towns of Rishikesh and Haridwar before entering the plains. The first noticeable thing about Rishikesh is its serenity and absolute unhurried way of life. Nestled amidst the Shivalik Range, the town is quieter and cleaner than its more populous twin Haridwar. Back in the '60s, it gained instant but fleeting fame as the place where the Beatles came to be with their guru, Maharishi Mahesh Yogi. In the '70s, it was a popular destination for the 'flower children'. Today, other than being an excellent place for the study of Hinduism and yoga, Rishikesh also attracts white water rafting enthusiasts.

The ghats of Garhmukhteshwar.

Water Sports

While cruising down a river at a leisurely pace is one of the best ways to enjoy the landscape, those seeking an adrenalin rush have numerous other options. White water rafting is one of the most demanding water sports in India today, and the rivers of the eastern and western Himalayas with their numerous staircase rapids (that challenge the spirit of the river runner), are among the best in the world. The mystical Ganges has always remained a favourite with rafters, and Rishikesh and Shivpuri in Uttaranchal are popular spots. The most run white water stretch on the Ganges is from Kaudiyala to Rishikesh. On this 36-km stretch, the river has 12 major rapids, most of which are easily negotiable. As this area is close to the Rajaji National Park, one can detour slightly to observe many species of resident and migratory birds.

Most river rafting camps on the Ganges operate from the end of September to mid-December, and from mid-February until late April. Tour operators can arrange rafting excursions that vary from day-trips to extended camping/rafting expeditions.

The Beas and Zanskar rivers in Himachal, Indus in Kashmir, Teesta in Sikkim and the Brahmaputra and its tributaries offer some of the best white water courses, but these are normally negotiated by professionals due to their level of difficulty.

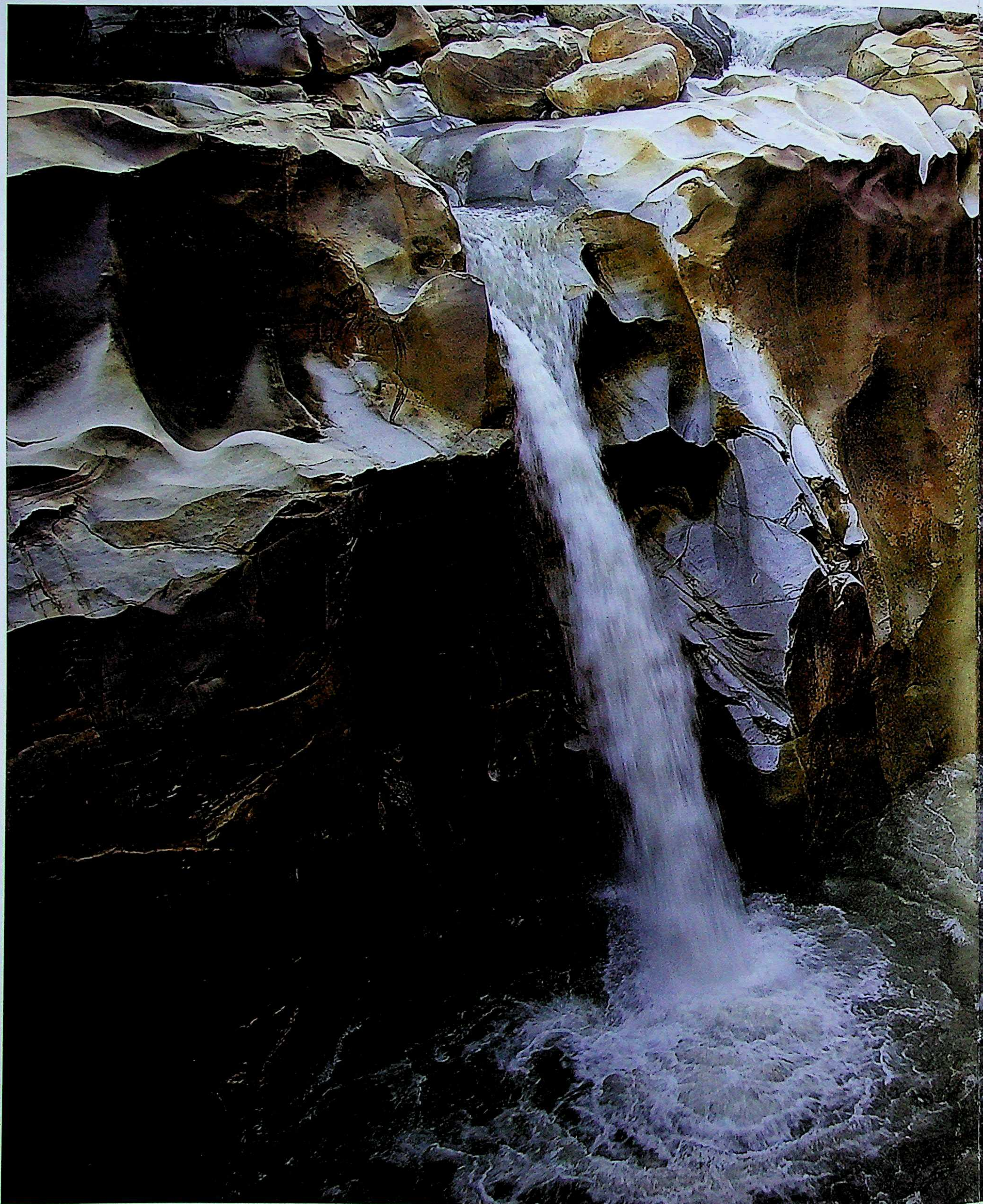
Kayaking is another water sport that is becoming popular with thrill seekers. One can combine this sport with trekking in the sanctuaries and forest trails along the rivers. For white water kayaking, the suitable stretches are along Rishikesh, Dakpathar and Ramganga in Corbett National Park.

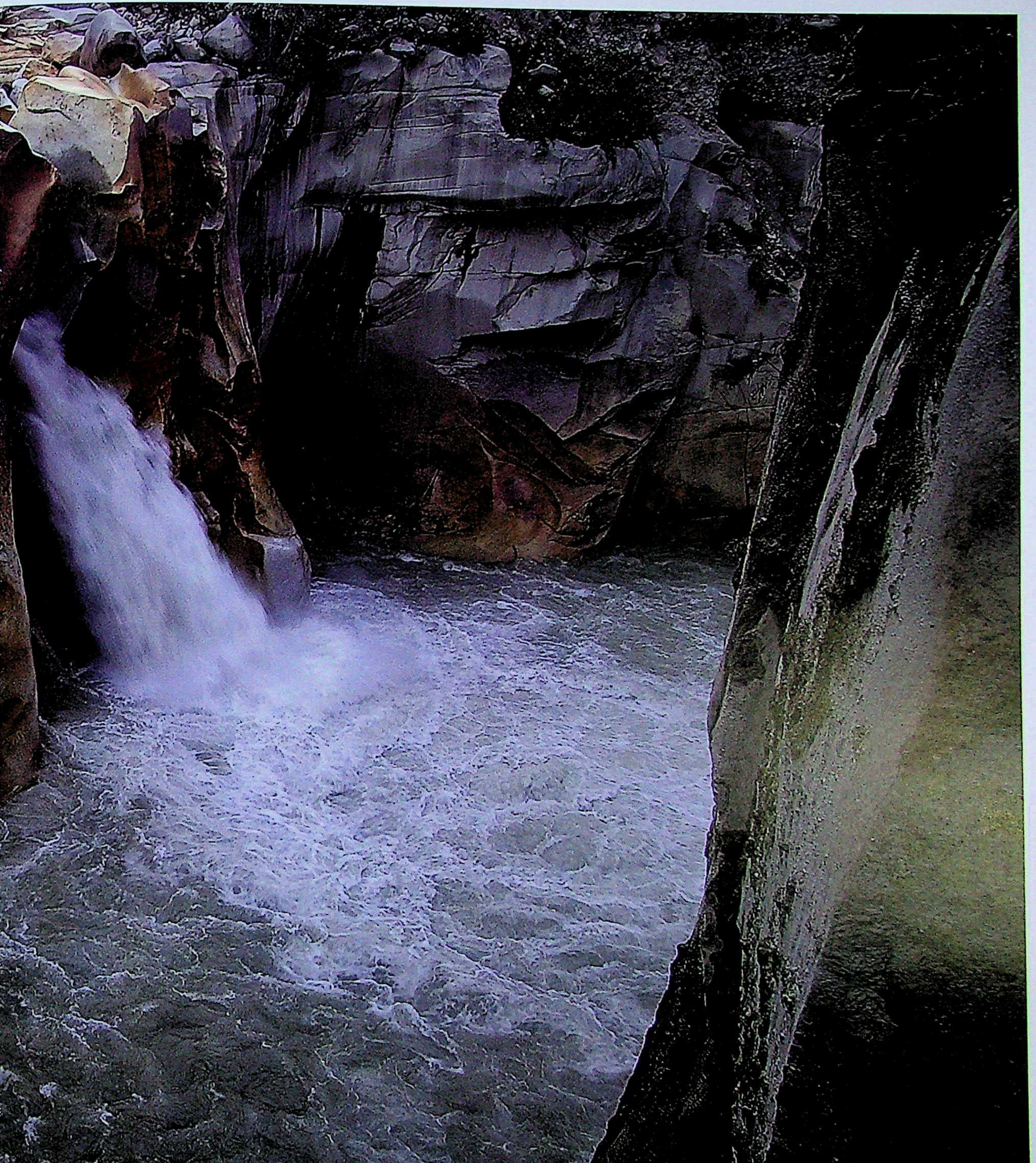
Angling is a recreational activity that is quickly catching on. Kashmir, with its spring-fed rivers and high altitude lakes such as Tso Moriri that abound in brown and rainbow Trout, is an angler's paradise. The rivers of Himachal and the Garhwal region of Uttaranchal are also excellent for trout fishing and the best sport-fishing season is from May to September.

The rivers of the northeast are famous for the world's finest game fish, the Mahseer; hooking a 30 kg fish here, is not uncommon. In the south, the Kaveri in Karnataka is the preferred destination for anglers. Fishing camps organized by the state tourism departments are often the best bet, as they are fully equipped.

Every year in the month of February, the Ganga Rally is organised on a stretch between the pilgrimage towns of Allahabad and Varanasi. This 3-day event starts with a display of water sports and a demonstration of small hovercrafts. Participants take to the water in a variety of crafts—kayaks, canoes and rowing boats. The first part of the rally starts in Allahabad and concludes at Chunar, a historic fort 37 km from Varanasi. The Ganga Marathon on the last day, provides an exciting finale to the event. The final 40-km stretch from Chunar to Varanasi is run as a river marathon and the winning team is felicitated with the much coveted Benares Cup.

Facing page and below: *River rafting and kayaking are water sports that are very popular.*





The Kumbh Mela

The Kumbh Mela is the largest religious gathering in the world and the most important river festival in India. Nowhere else do you see millions of pilgrims, thousands of ascetics and an equal number of curious tourists trying to make sense of this mass jamboree called the Kumbh.

While the main event is celebrated once in 144 years, the scaled down versions alternate between 12 and 6 years respectively. While unauthenticated translations of Hindu liturgical texts claim that the Kumbh is a Vedic phenomenon, the earliest references are found in the accounts of the Chinese traveller, Huan Tsang (602 - 664 AD) who visited India during the reign of King Harshavardhana.

There is a very interesting story behind the choice of venues for the Kumbh. According to legend, the gods had lost their power of immortality and to regain it they had to churn the primordial ocean of milk, to obtain *amrit,* or the elixir of life. As this task was too demanding for the gods to tackle by themselves, they had to seek the assistance of their archenemies, the demons. The conniving gods promised to share the elixir equally, but when the vessel finally surfaced, a fight ensued. During the altercation, the demons did not notice Vishnu's celestial mount Garuda, who swooped down and carried

NATURAL SHIV LING

Pages 58-59: *The Bhagirathi cuts through a deep gorge at Gaurikund before making its gradual descent into the plains. Local tradition claims that this is the spot where Gauri lived while carrying out severe austerities and it was here that Shiva finally admitted his love for her.*

Left: *Floral offerings for the gods at Haridwar.*

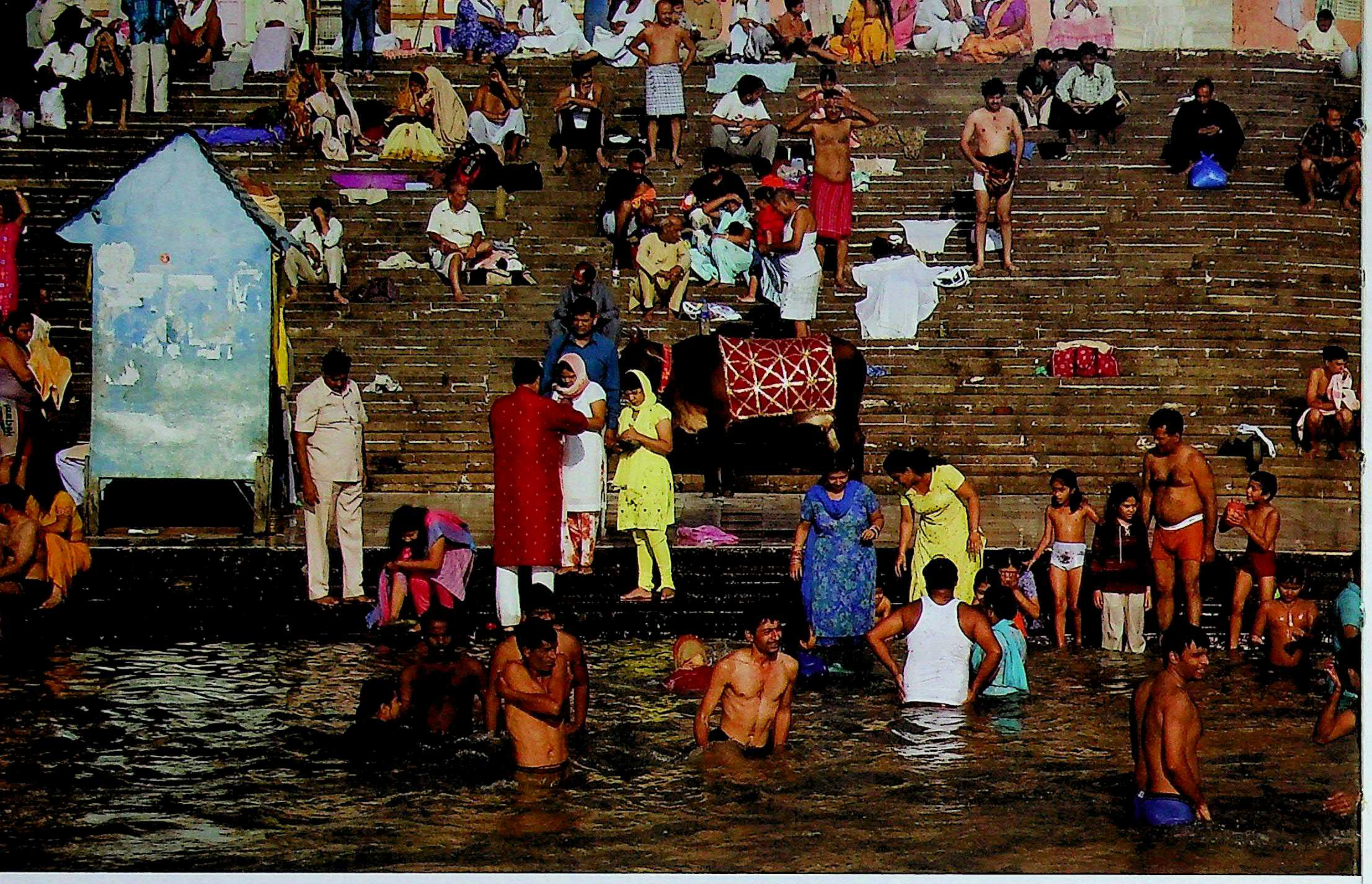
Below: *Haridwar: The Hari-ki-Pauri ghat in Haridwar attracts many pilgrims throughout the year, and especially during the Kumbh Mela.*

off the vessel containing the elixir. In his haste, a few drops fell at four places on earth: Allahabad, Haridwar, Ujjain, and Nasik. These then became the main venues for the Kumbh Mela.

Hindus believe that the elixir of immortality is present in the waters at this time. The main event of the festival begins at dawn with the processions of the Naga sadhus. These sects whose members formerly made their living as mercenary soldiers still monopolise the holiest spots at every Kumbh's most propitious moment. Although the government now enforces an established bathing order, there are bloody disputes between groups vying for precedence.

Besides the Nagas, attendees at the Kumbh Mela come from all sections of society. These include holy men and their disciples, hermits who leave their isolation only for these pilgrimages and vast crowds of devotees and curious onlookers that include a large number of foreign tourists. Attendance at the festival sometimes reaches an estimated 10 million.

Hindus believe that a holy dip during the fair will give them a chance to bathe in the essence of purity, auspiciousness and immortality. Although the 'Kumbh' refers to the mythic pot of elixir, it is also the Hindu astrological sign for Aquarius.



Pilgrims taking a ritual dip at the ghats of Haridwar.

As one follows the river into Haridwar (gateway to the plains), the saga of the polluted Ganges becomes evident. Haridwar lies at the foot of the Shivalik Hills. The reason this little town draws so many pilgrims is because the narrow bathing ghat known as Hari-ki-Pauri is said to be the precise spot where the Ganges leaves the mountains and enters the plains. The prayer rituals at the ghats are the town's biggest attraction. The famous Kumbh Mela, which the town hosts every 12 years is said to draw more than a million pilgrims.

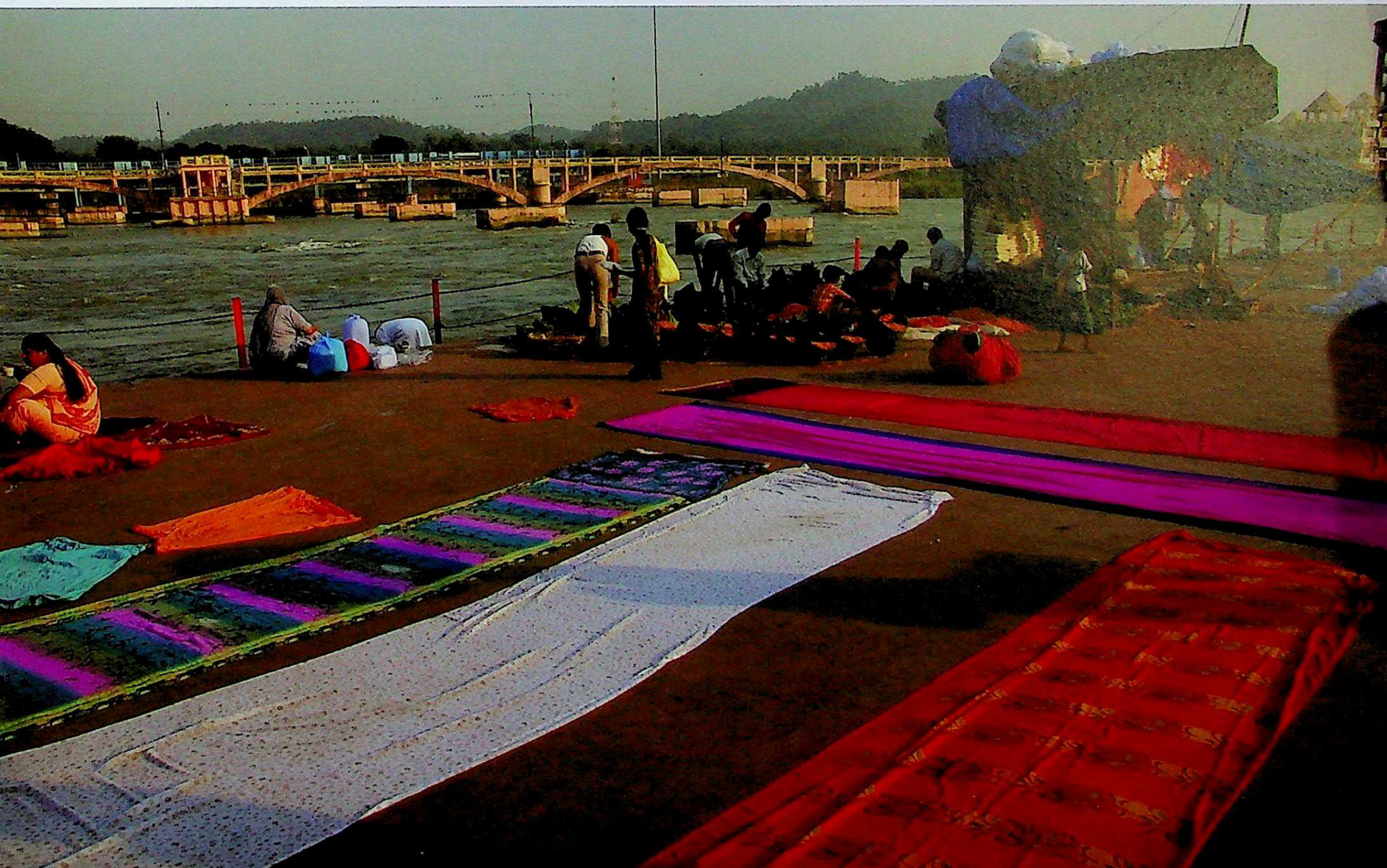
From Haridwar, the Ganges flows in a northeasterly direction before entering Uttar Pradesh near Garhmukteshwar, a village of great antiquity that was once part of the Hastinapur Empire. Its name is derived from a temple dedicated to the legend of Ganga's descent. This place is also famous for one of the rarest mammals on earth—the Gangetic Dolphin. Agricultural barrages along the river are destroying its habitat. If the dolphin is an indicator of a river's health, the Ganges is certainly ill, for very few of these magnificent mammals can be found today.

The Ganges flows past the polluted city of Kanpur on its way to Allahabad where it meets the Yamuna in a sweeping arc. It is also believed that the mythical Saraswati joins the other two rivers here and this has earned the city the epithet of Tribeni Sangam, which literally means three-way junction. Allahabad is also the principal site for the Kumbh Mela. As the Ganges travels eastward, it flows past the holy town of Varanasi, which Hindus believe is the cosmic centre of the universe. The Jyotirlinga shrine of Kashi Vishwanath, which was rebuilt in 1780 by Maharani Ahilyabai Holkar, is one of India's most sacred temples. The name Varanasi is derived from two tributaries of the Ganges. The one in the north is called Varuna while Assi in the south is now reduced to a drain. It is said that dying in Varanasi circumvents rebirth. This belief has encouraged the proliferation of geriatric homes in the city and has led to the disposal of half-burnt corpses in the river.

The city has been a centre of learning for over two thousand years. It was at Sarnath (10 km away) that the Buddha delivered his first sermon of enlightenment.

Just east of Varanasi lies Chunar, a little hill fort that is linked to the rise of the Mughal dominion over north India. In 1574, Akbar extended his influence over the town and it remained under Mughal hegemony until 1772 AD, after which the British used it as an ammunition depot.

Haridwar: Garments left out to dry at the ghats make a colourful sight.



JAMES PRINSEP

Built in 1843 to commemorate Sir James Princep, a renowned researcher and former secretary of the Asiatic Society, the Princep Ghat was often the first sight that caught the attention of British sailors entering Calcutta (now Kolkata).

Centre: *Barbers and their clients at the ghats of the Hooghly.*

From Chunar, the river meanders towards Bihar. Near Patna, it meets three of its largest tributaries. While the Ghaghar and Gandhak are trans-boundary perennial rivers that rise in the Tibetan Plateau, the Sone originates in the Amarkantak Plateau of Chhattisgarh. About 40 percent of the total flow in the middle Ganges (nearly three-quarters in the dry season) comes from China and Nepal. During the monsoon, the snowmelt of the eastern Himalayas combined with torrential rain, inundates large parts of the Gangetic plain in Bihar rendering millions homeless.

The modern city of Patna (Bihar's state capital) is perhaps the world's largest riverine city. Its recorded history goes back to 500 BC and its origins are closely linked to the rise and fall of the Magadhan Empire. Magadha's success was due to the political aspirations of its astute ruler Bimbisara. His conquest of Kalinga (circa 500 BC) gave him access to the entire Gangetic delta.

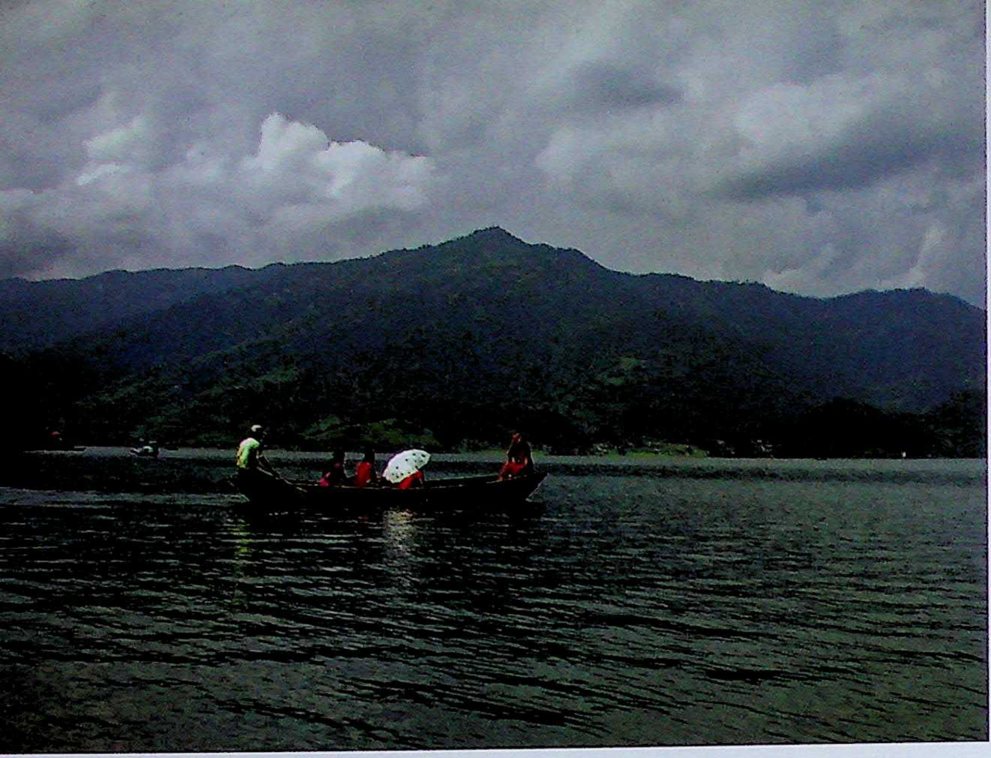
Chandragupta Maurya and his son Bindusara ruled over a vast empire, which stretched from Bengal to Afghanistan. The Ganges, then navigable throughout the year, was the principal river highway from Delhi to Bengal. From the river ports of Patliputra (Patna) and Champa, (near Bhagalpur) Mauryan vessels sailed as far as Sri Lanka and Java. Emperor Ashoka (Chandragupta's grandson) who ruled from 273 to 232 BC was one of India's most

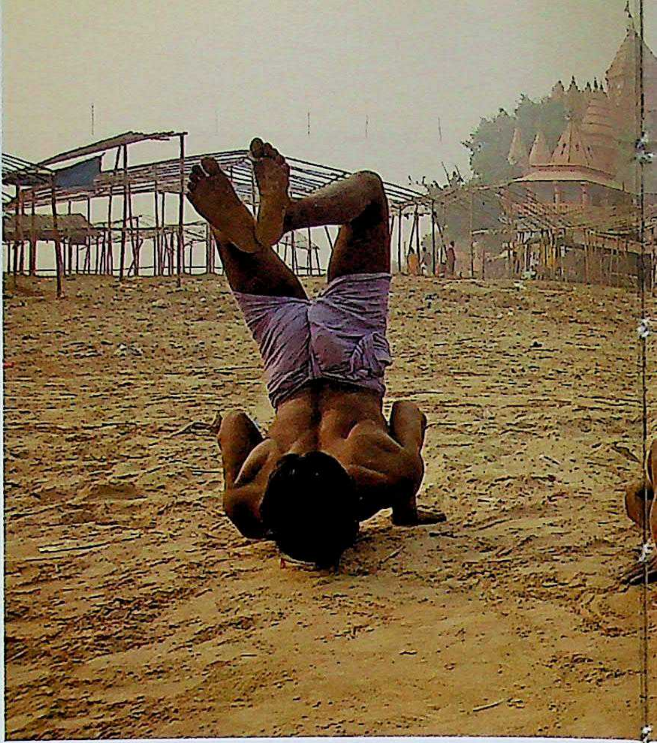
illustrious rulers. With his conquest of Kalinga, maritime trade along the Ganges reached its apogee.

Minor shrines dedicated to a plethora of gods and goddesses line the ghats of the Hooghly in Kolkata.

The town of Munger (200 km west of Patna) is sited on the southern bank of the Ganges. Munger's association with history dates back to the age of the *Mahabharata*. It is believed that this was a part of the kingdom of Anga (whose king Karna was the half-brother of the Pandavas). However, the earliest Pali inscriptions in Munger can only be dated between 6 BC and 5 AD and are found on a temple pillar on the riverbank.

Although known as the cradle of Buddhism, Bihar has a vast Hindu population and Hindu festivals are celebrated with great fervour. Every monsoon, the Ganges swells and breaches its banks, and millions of devotees congregate in Sultanganj to celebrate Shrawan, the season of rain. Pilgrims in saffron robes known as *kanwarias* collect water from the Ganges in metal pitchers that are suspended from the ends of bamboo poles. Balancing the poles on their shoulders, devotees walk barefoot to Deoghar in Chhattisgarh (108 km away) to bathe a sacred Shivaling. The Shravani Mela, associated with this auspicious period, lasts for a month and attracts devotees from as far as Nepal and Bhutan. The Ajgavinath Temple on the banks of the Ganges in Sultanganj is the starting point of this religious trek.





Clockwise from top:
About 40 percent of the total flow in the middle Ganges (nearly three-quarters in the dry season) comes from China and Nepal. The Kosi is one of the major feeder rivers of the Ganges.

Wrestlers practice their skills against the backdrop of the Ajgavinath Temple in Sultanganj.

Many pilgrims come to the banks of India's holy rivers to participate in an annual ritual called Pind Dan that is believed to help free the souls of the departed.

In West Bengal's riverside towns the river still remains the principal highway for transportation of goods and people.

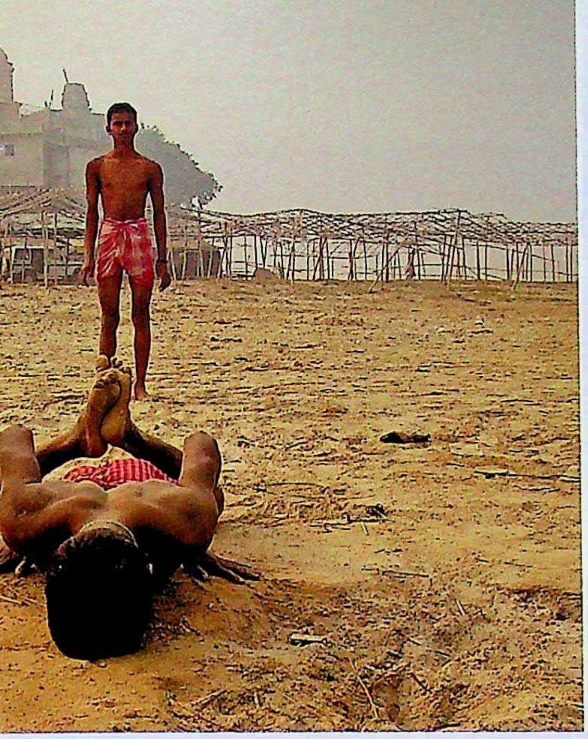
Pages 68-69: *Kolkata's famous Outram Ghat against the backdrop of the Vidyasagar Setu, also known as the Second Hooghly Bridge.*

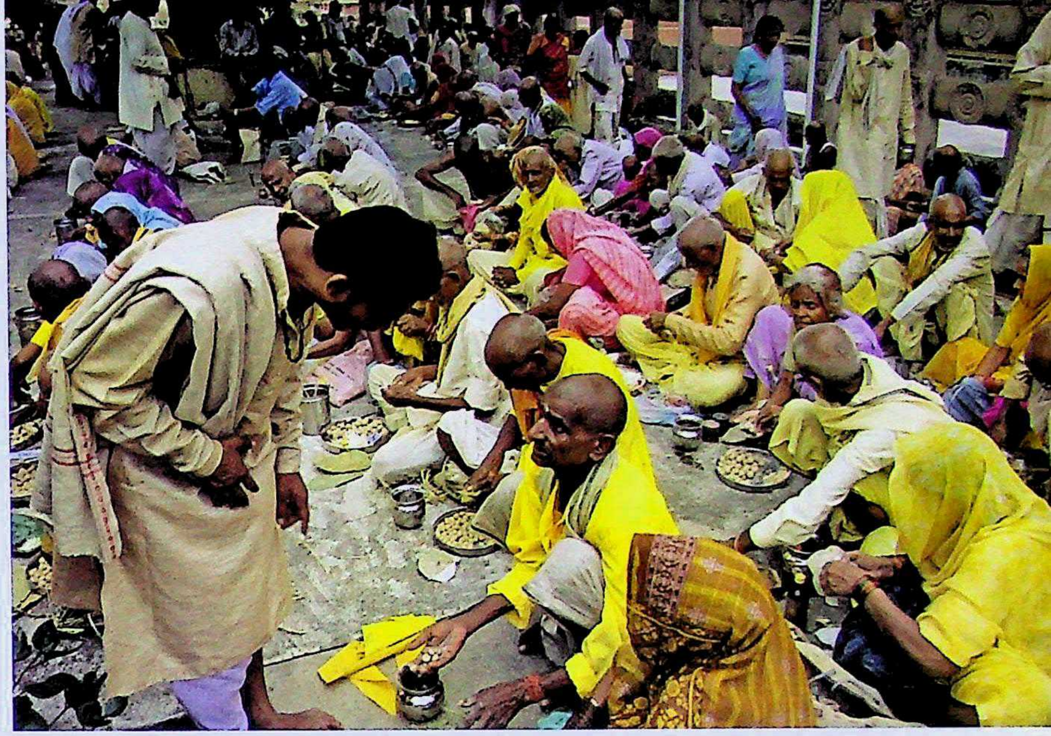
Bhagalpur near the West Bengal border has a great historical past. From the accounts of the 7th century Chinese travellers Huan Tsang and Fa Hien, we know that a large river port existed on the banks of the Ganges near Nathnagar (on the city's western boundary). Excavations in the area have yielded skeletons of boats and foreign coins. Historians believe that Bhagalpur was only next to Patliputra in terms of trade. The city finds mention in the Puranas and is also believed to be the capital of Karna's kingdom.

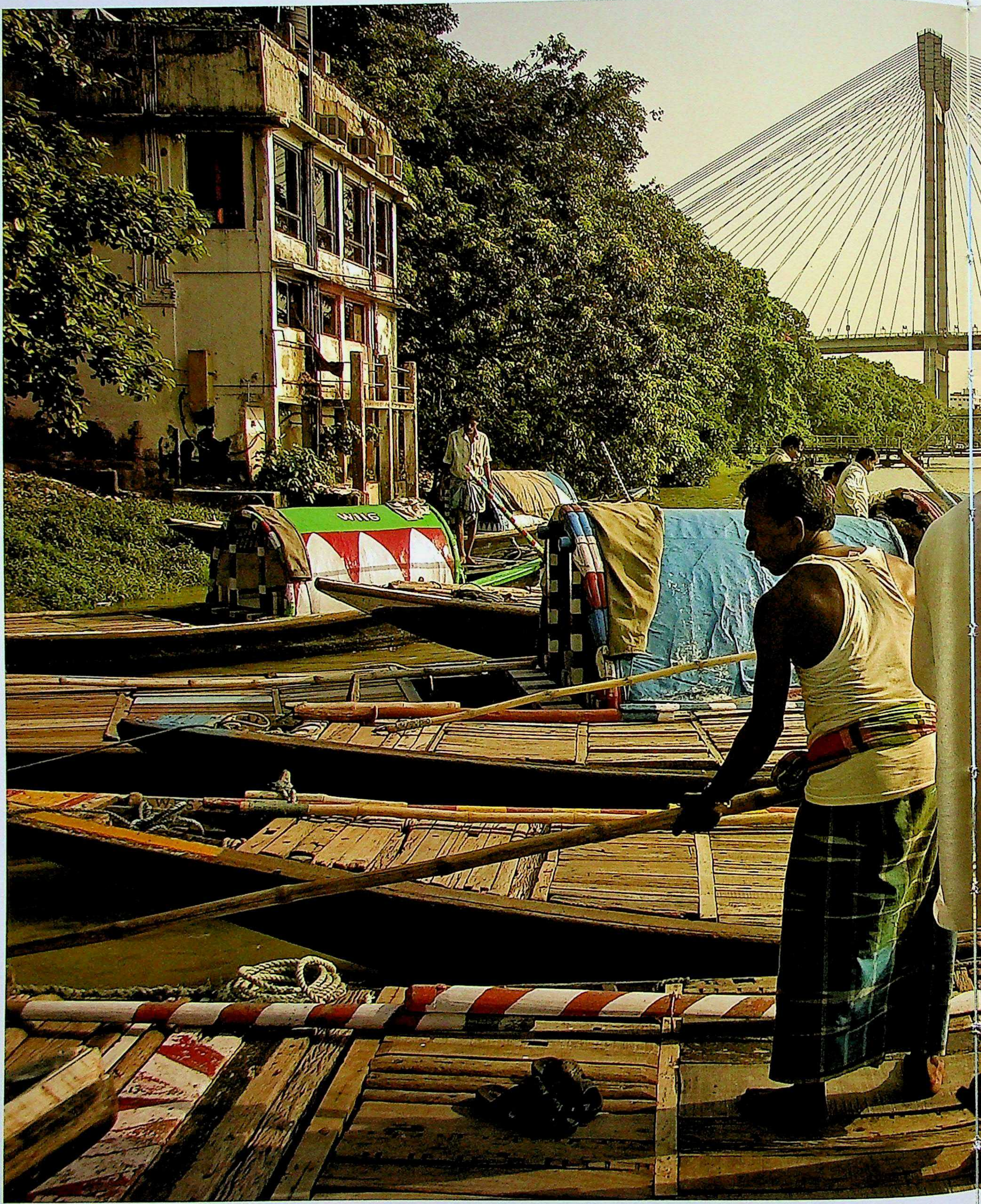
Once the Ganges enters West Bengal, a large volume of its headwater is directed towards Malda. Here the river splits into two main tributaries—the Bhagirathi (not the same as its namesake in the upper course) and the Padma. While the Padma flows into Bangladesh through the Farraka Barrage, the Bhagirathi continues its journey through West Bengal as the Hooghly.

Murshidabad, which is closely associated with the history of Bengal, gained prominence in the 16th century during Akbar's reign. In 1704, Nawab Murshid Quli Khan (on Aurangzeb's orders) chose the town (over Dhaka) as his capital and lent his name to the city. Murshidabad comprises of two distinct regions separated by the Ganges. The eastern bank extends into a fertile low-lying alluvial tract that is part of the Gangetic Delta. Its river system comprises of the Ganges and its distributaries (of which the Bhagirathi and Jalangi are the most important).

Every year, the unpredictable Ganges wreaks havoc in its middle and lower course. Environmentalists warn of more devastation unless action is taken to save the 'dying delta', which stretches across eastern India and Bangladesh. In a natural



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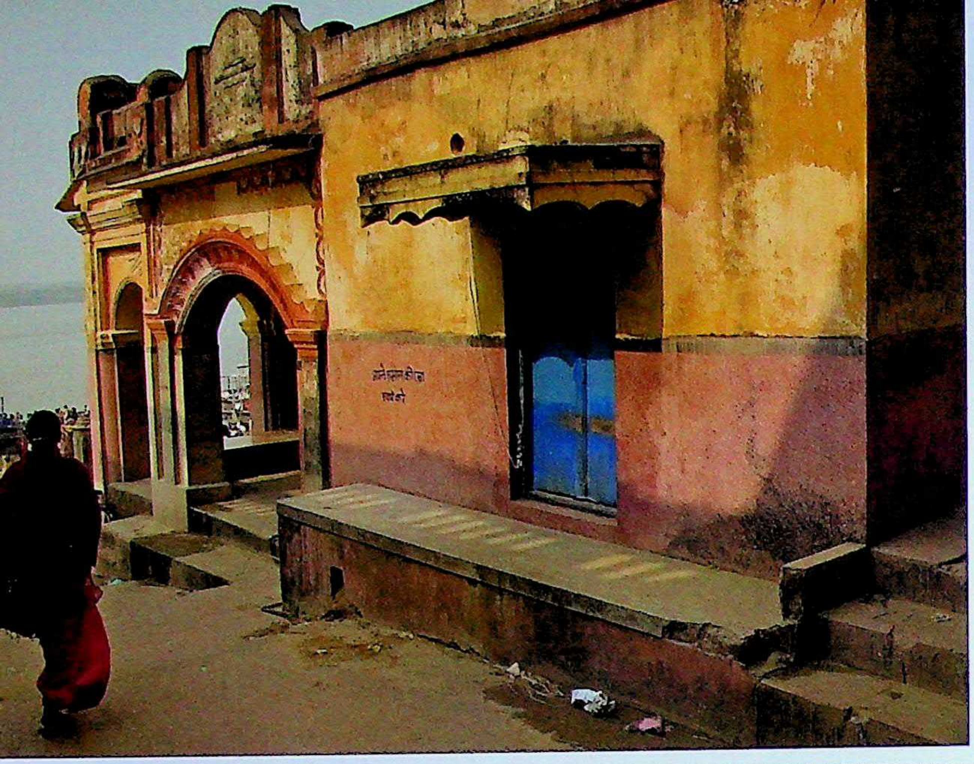
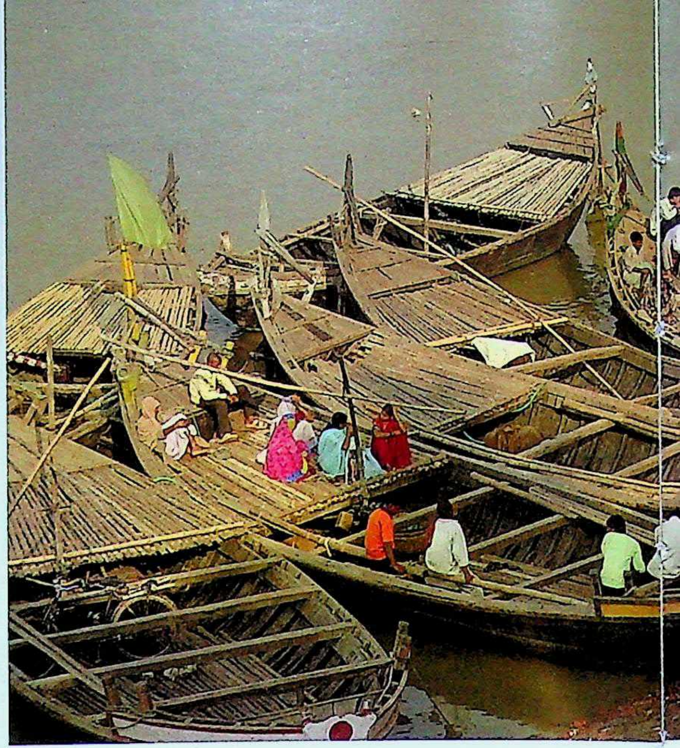
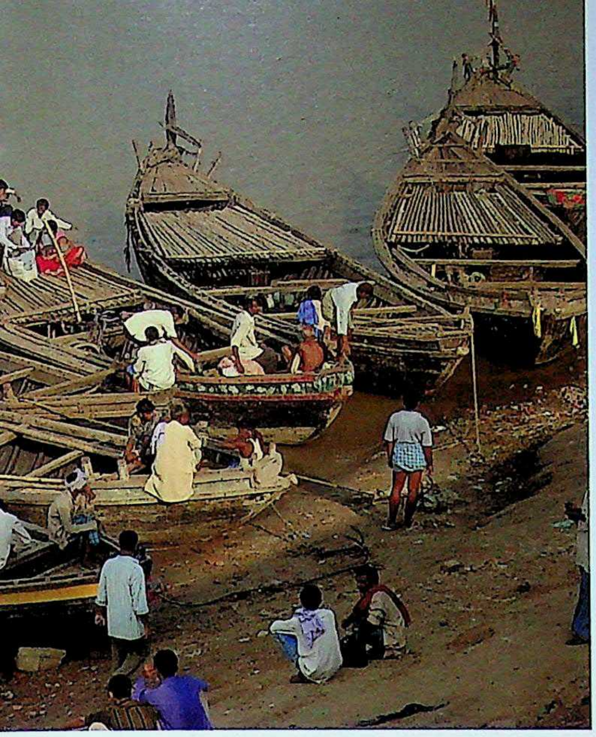
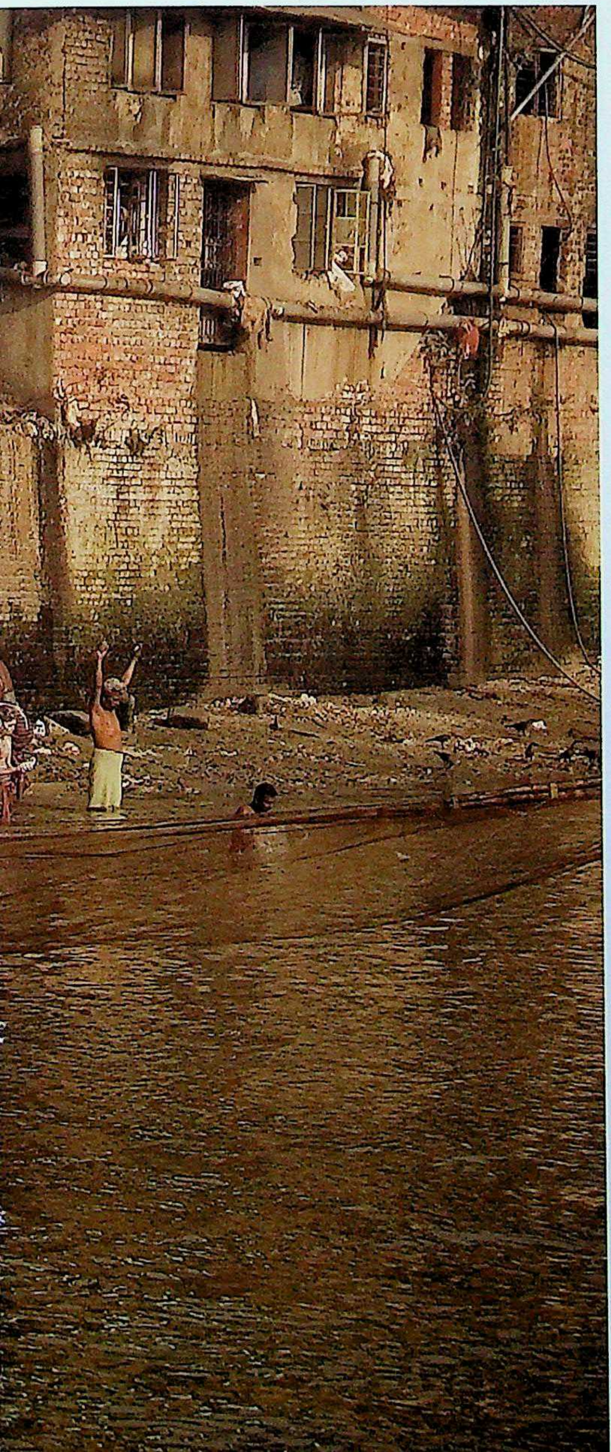








Clockwise from top left:
The ancient river port of Munger.

Following the construction of the Mahatma Gandhi Setu, river boats have lost their importance. Today boatmen often give up their ancestral profession in search of better opportunities.

A scene from Howrah Bridge. For the millions who live on the banks and have no access to toilets and other sanitation facilities, the river is a watering hole, a bath house, a septic tank, a laundromat, a cleansing pool and a garbage dump all rolled into one.

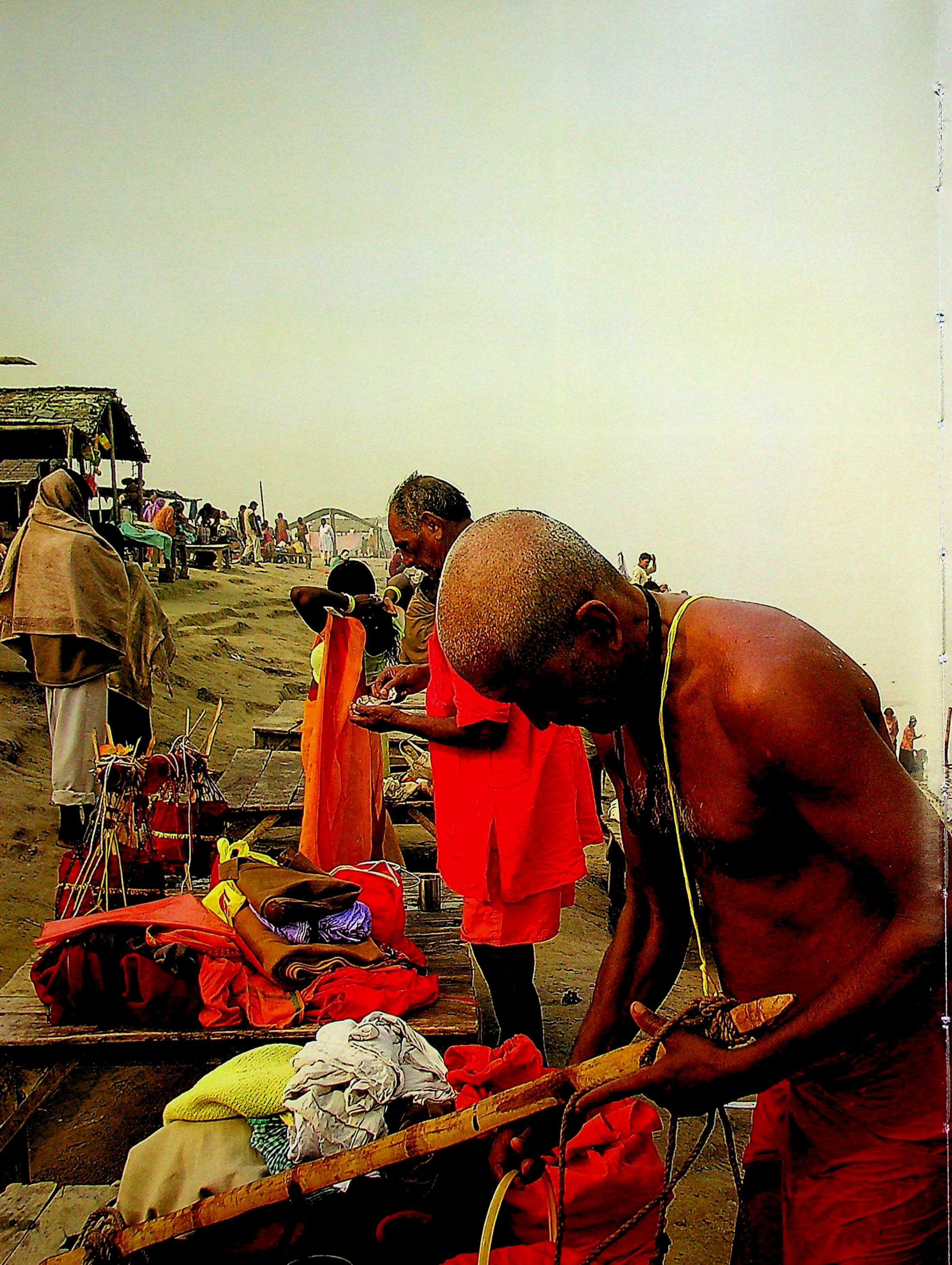
phenomenon that has been occurring for centuries, the course of the Ganges oscillates. Every few decades, a ten km stretch along either bank is swallowed by her floodwaters. The erosion is aggravated by indiscriminate exploitation of groundwater and unplanned human settlements in the region.

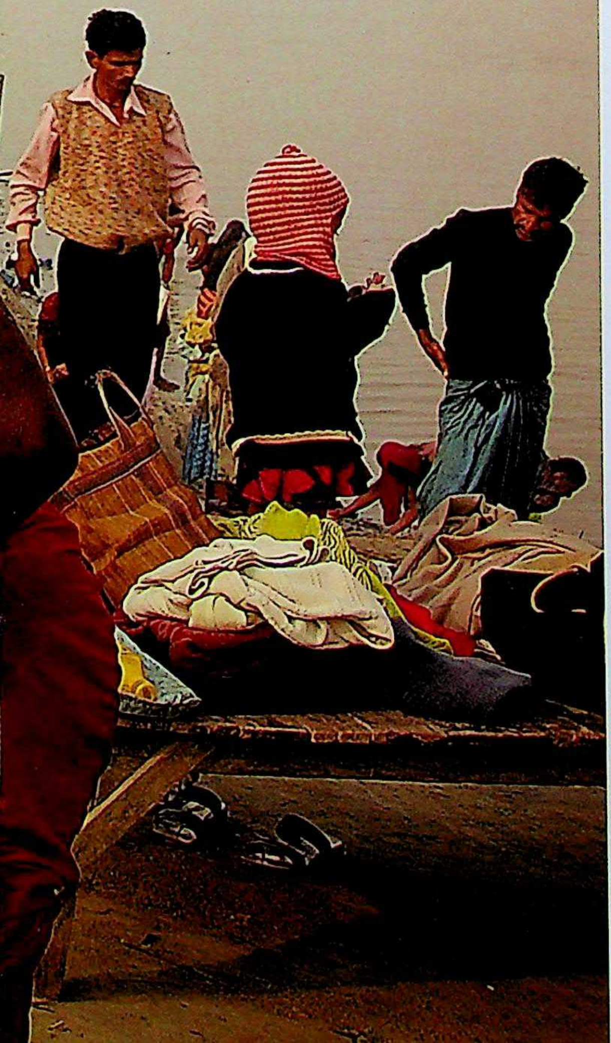
While the erratic nature of the Ganges can be traced back to as early as the 13th century, its tributary, the Bhagirathi, has also flooded the hinterland several times in the last two centuries. The problem, however, assumed endemic proportions in the 1970s, following the construction of the Farraka Barrage. Experts maintain that by obstructing the natural course of the river, the barrage aggravated the problem of erosion and contributed to the process of silting at its mouth. If one were to navigate along its major tributary, the Hooghly, it would become evident why silting sounds the death knell of a river.

The Hooghly has played a crucial role in the development of the City of Joy. Part of the Gangetic river system, it provided an arterial link that connected Delhi (the political epicentre of India) to Calcutta, the capital of India between 1772 to 1912.

The secure trade channel that the Bhagirathi-Hooghly river system provided ensured that Calcutta continued to prosper until the end of the Second World War. Following independence, political unrest and Leftist trade unionism destroyed the commercial fabric of the city and today, modern Kolkata is a brooding relic of its resplendent past.

The Hooghly provides a perennial supply of water to the plains of West Bengal for irrigation and industry. It still serves as one of the major waterways in the region. Before silting destroyed its character, Calcutta was British India's busiest port. The modern





The Shravani Mela is one the most celebrated river festivals in eastern India. Devotees carry water from the Ganges at Sultanganj in pitchers and walk to Deoghar in Jharkand where they bathe an idol of Shiva in the temple of Baba Baidyanath.

container port of Haldia (on the intersection of the lower Hooghly and Haldi rivers) now carries much of the region's maritime trade.

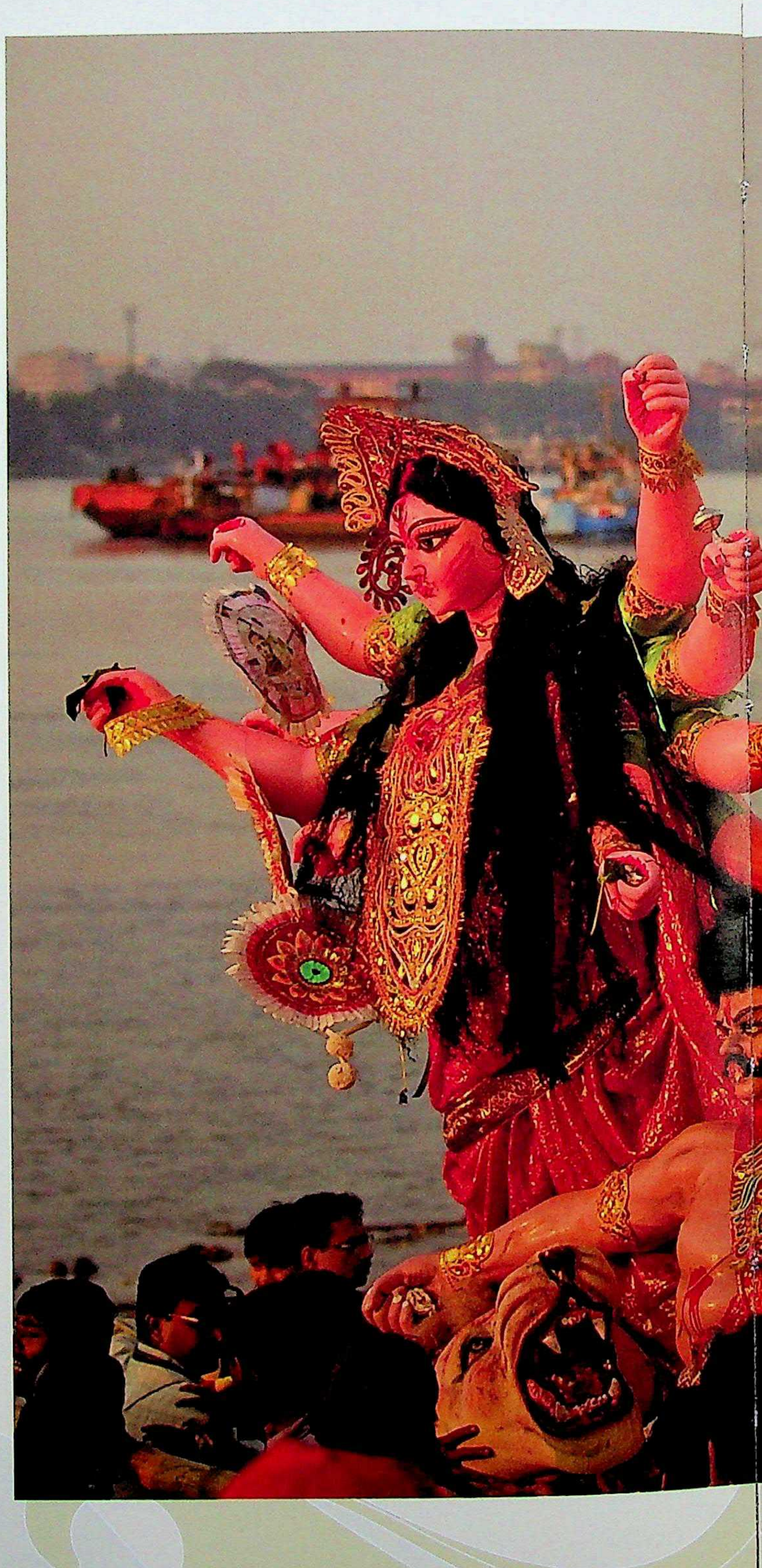
Ganga Sagar Island (200 km from Kolkata) is the spot where the Ganges enters the Bay of Bengal. If the birth of the Ganges is ascribed to Bhagiratha's penances, it is with his blessings that this Island became an intrinsic part of Hindu belief. It is apparently here that his ancestors attained salvation when the Ganges blessed their mortal remains.

In the month of Makar Sankranti millions of Hindu pilgrims from across the country come here to participate in one of India's largest religious fairs—the Ganga Sagar Mela. According to local lore, unmarried girls who take a dip during this period find handsome husbands, while bachelors are blessed with beautiful brides. Some local girls, in a strange ritual "marry" the sea, to ensure that they never become widows.

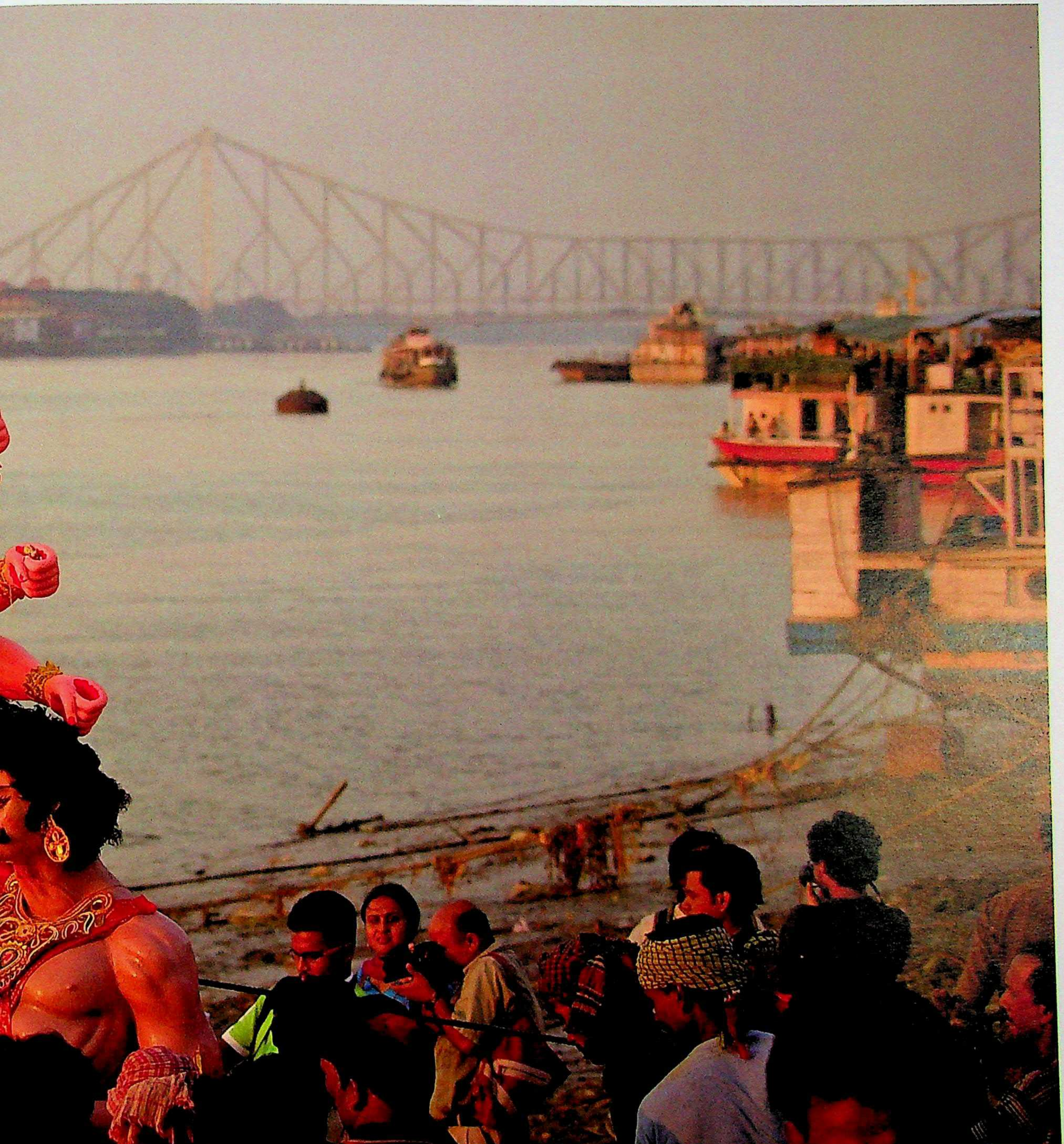
The narrow approach to the seafront is congested with temporary huts selling food and religious offerings. They also serve as front offices for priests who are highly sought after at this time. The pilgrims congregate on the beach the previous night and sit around campfires singing devotional songs. The moment the auspicious hour is announced by the sounding of conches, the chanting reaches a crescendo. While this exercise might seem futile to many, the contentment on the faces of the pilgrims who firmly believe that the benevolent Ganges will grant their wishes compensates for all scepticism. India's holiest river finally ends its long journey here and becomes one with the sea.

Kolkata and The Hooghly

Kolkata (previously Calcutta) is only a three-hundred year old British invention. In 1686, the British abandoned their trading post in the town of Hooghly and relocated 38 km downstream to three small villages—Sutanati, Gobindpur and Kalikata. Calcutta took its name from the last of the three. Job Charnok, a leader of the British merchants' guild chose the site because of its favourable location. The site was protected by the Hooghly River on the west, a creek to the north and by salt lakes in the east. Initially the trading post was not successful and was abandoned on numerous occasions. In 1696, the area around present day Dalhousie Square was fortified. Two years later, Aurangzeb's grandson granted the East India Company official permission to use the villages as a trading post in exchange for a yearly fee of three thousand rupees. The French, Dutch and Portuguese also squabbled for supremacy over the lucrative river highway, but lost out due to the successful British policy of gerrymandering. In fact, the Portuguese had a trading post on the Hooghly long before the British colonised India. However, British military-might suppressed their expansion plans and the Raj unfurled the Union Jack over Calcutta, conferring upon it the coveted title of the Capital of British India.



The Durga Pooja culminates with the immersion of idols in water bodies; in this case the Hooghly River.



Famous Bridges

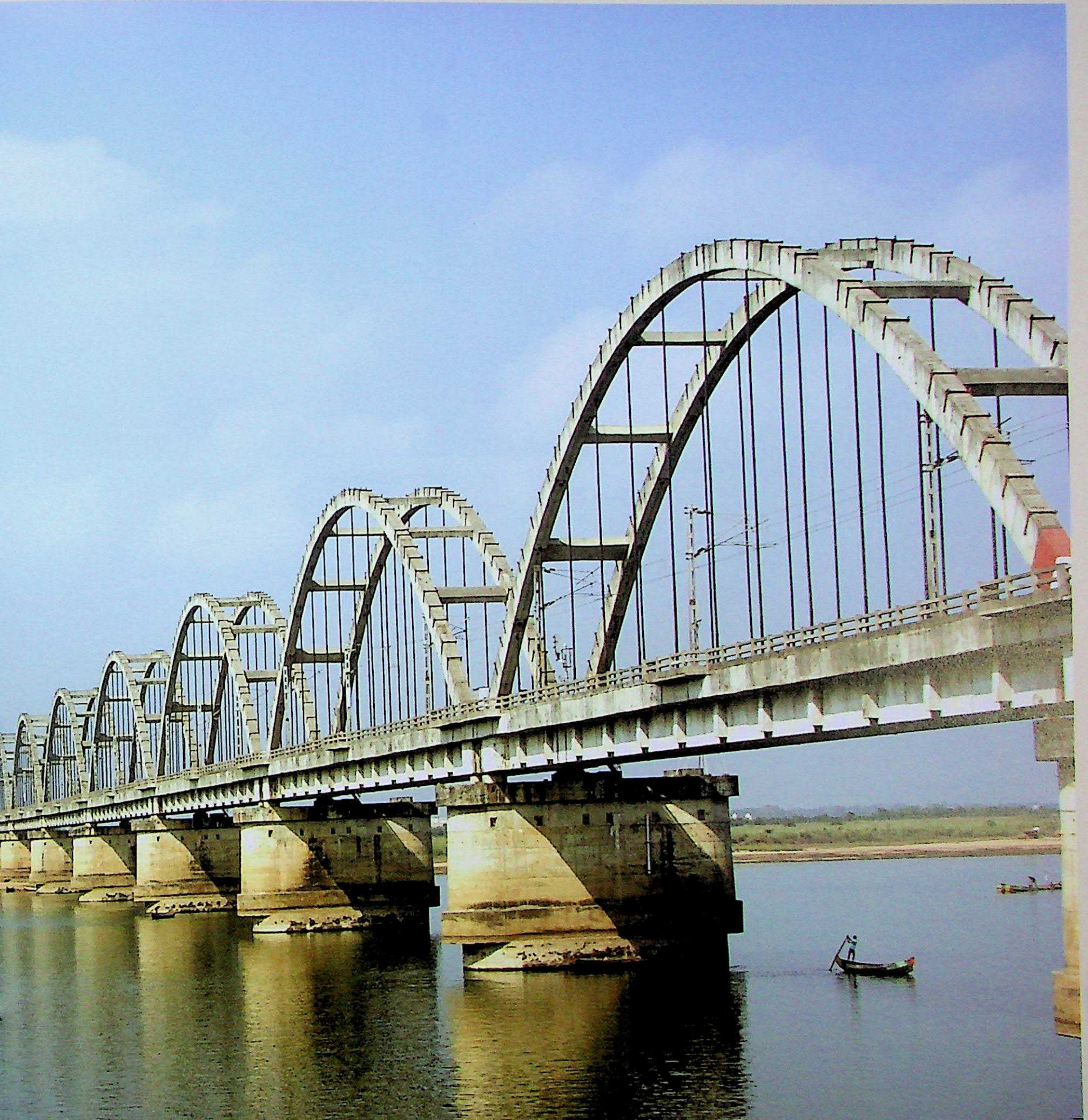
Some of the earliest bridges were simple structures made of ropes or vines twisted together, suspended from an elevation on either side of the river. These vine bridges are still used in the Zanskar region of Ladakh and on the remote rivers of Arunachal Pradesh. As the demands for more sophisticated bridges increased, construction techniques evolved. Medieval armies often used temporary bridges made of wood to make river crossings. Roman stone arch bridges came next; they were replaced by iron cantilever constructions in the early 20th century. With the explosion of railway and vehicular traffic, and the need for speed and connectivity, bridge construction in the 21st century has become one of the most technologically challenging engineering feats. India has at least eight major perennial rivers and numerous other seasonal rivers. The process of bridging them began with the arrival of the British and still continues.

Bridges on the Ganges/Hooghly river system

Howrah Bridge: One of the most iconic symbols of Kolkata is the Howrah Bridge. Built on the Hooghly River, its original purpose was to facilitate military transportation between Kolkata and its industrial twin-city Howrah during World War II. It connects the city to the Howrah Station, one of the busiest railway stations in the world. Built between 1937 and 1943, it is a cantilever truss bridge, constructed entirely by riveting, without a single nut or bolt.

This 705-metre long and 30 metre wide bridge is constructed from more than 26,500 MT of high-tensile steel and is supported by two piers, each nearly 90 metres above the road.

Rajahmundry Bridge—the juxtaposition of the old and the new on the Godavari River. Asia's largest rail-cum-road bridge linking Kovvur and Rajahmundry in Andhra Pradesh is considered to be an engineering marvel.



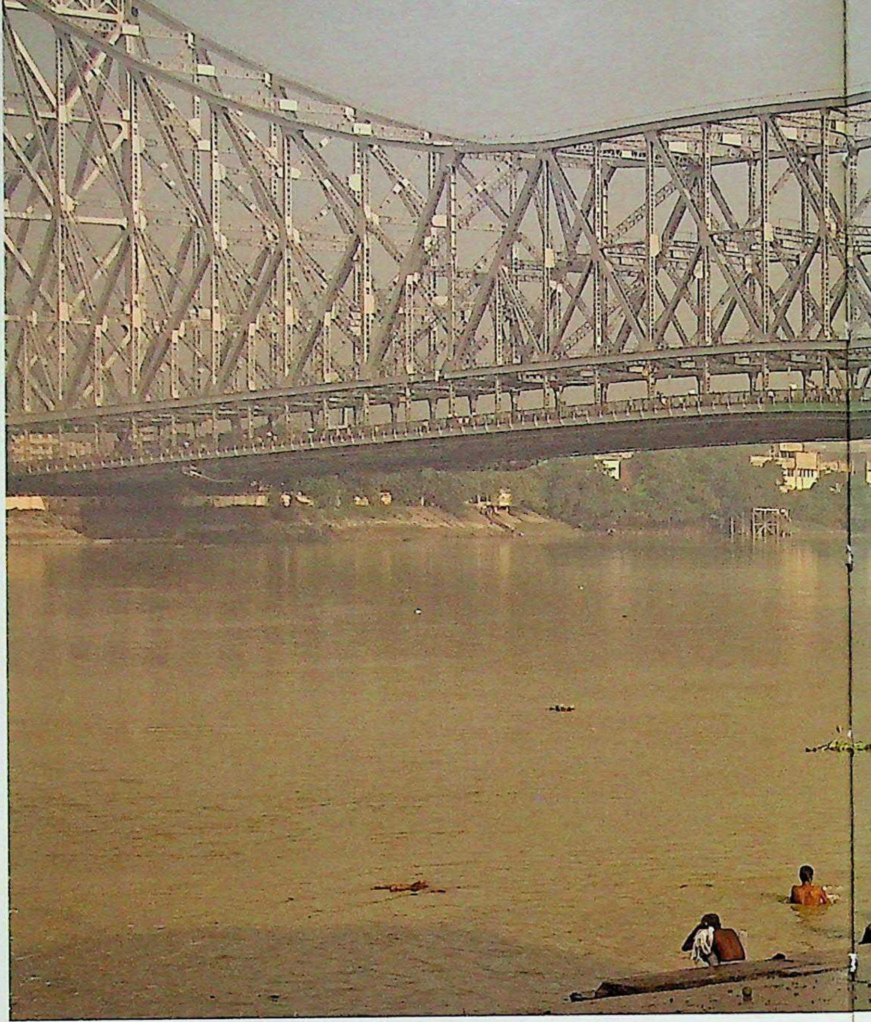
An engineering marvel, it expands as much as a metre during a summer day. The eight-lane bridge carries a steady flow of approximately 80,000 vehicles, and possibly more than 1,000,000 pedestrians every day. Although it is currently used as a road bridge, it previously supported a tramline too.

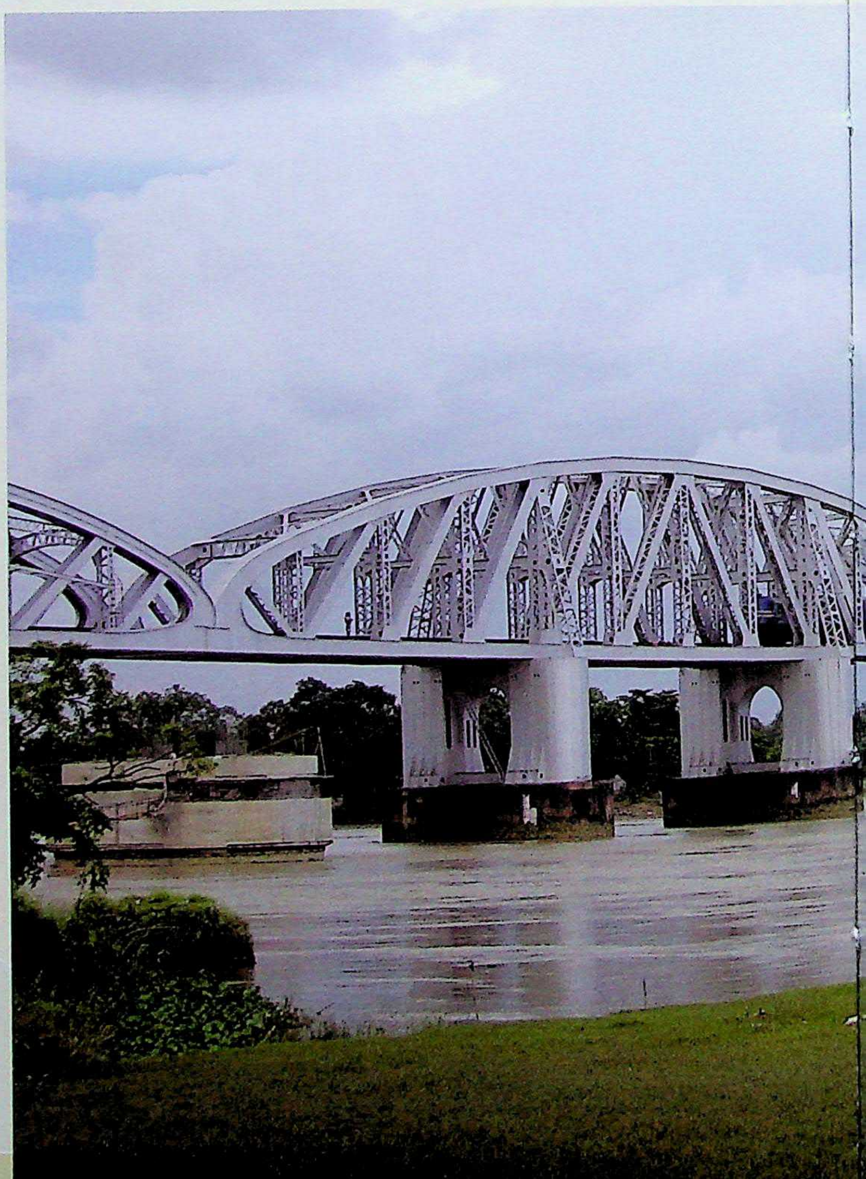
Originally named the New Howrah Bridge, on 14 June 1965 it was renamed 'Rabindra Setu' in honour of the poet and Nobel laureate Rabindranath Tagore. However, it still retains its old name. The bridge is one of the four on the river Hooghly.

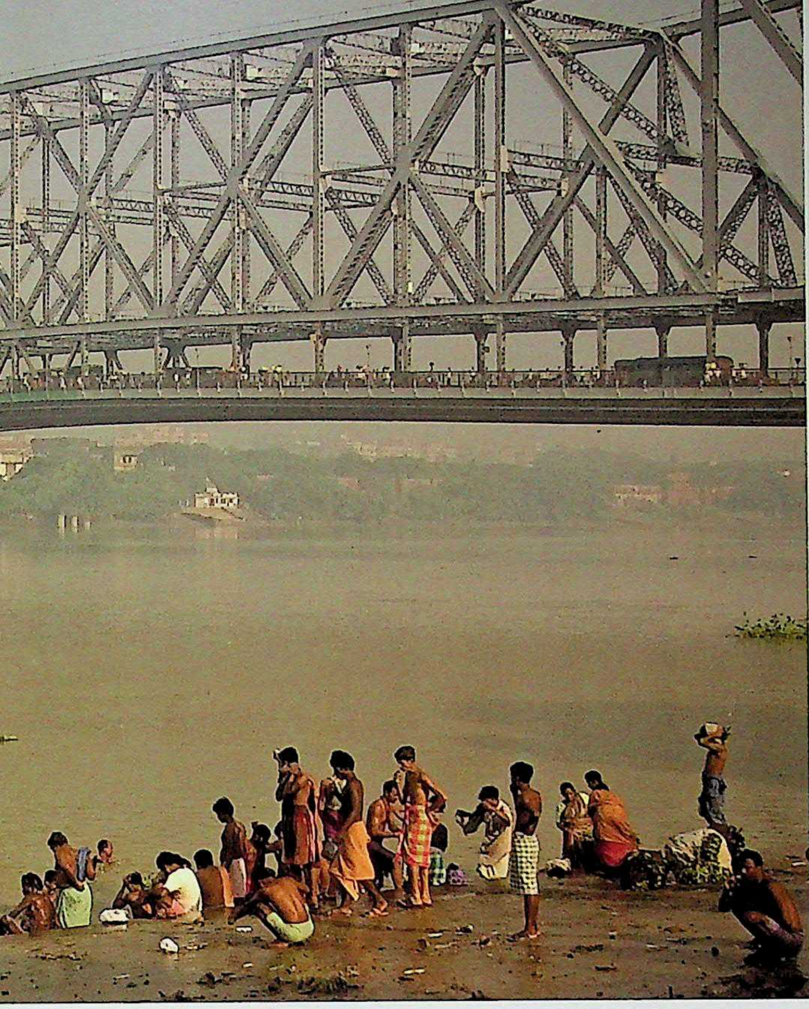
Vidyasagar Setu: Named after the well-known 19th century Bengali reformist, Ishwar Chandra Vidyasagar and commonly known as the Second Hooghly Bridge, this is a cable-stayed bridge, with a main span of approximately 457 metres, and a 35-metre wide deck. Like the famous Howrah Bridge, this also spans the Hooghly in Kolkata. Although its construction commenced in 1978, the bridge was inaugurated only on the 10th of October 1992. It is one of the longest bridges of its kind in Asia.

Vivekananda Setu: (also called Bally Bridge or Wellington Bridge) is yet another bridge that spans the Hooghly River upstream in Kolkata. It links Bally in Howrah, to Kolkata near the famous Dakshineshwar Temple. Its construction, which was completed in 1932, was contracted to the renowned industrialist Rai Bahadur Jagmal Raja Chauhan. This multi-span steel bridge provided a road and rail link between the Kolkata Port and its hinterland. The British called it Wellington Bridge after the then Governor of Calcutta and to acknowledge the great feat of its builder, they named the first train that ran across it the Jagmal Raja Howrah Express.

A newly constructed cable-stayed bridge has now come up beside the old Vivekananda Setu. **Nivedita Setu:** (also known as the Second Vivekananda Setu) is named after Sister Nivedita,







a famous social worker and a disciple of Swami Vivekananda. It acts as a vital link between some important highways for both Kolkata and Howrah. Other important bridges include Jubilee Bridge over the Hooghly River and Mahatma Gandhi Setu over the Ganga River in Bihar.

Bridges on the Godavari river system

The **Kovvur-Rajahmundry Bridge:** or the Godavari Arch Bridge is Asia's longest road-cum-rail bridge. This truss bridge crosses the Godavari in Rajahmundry and links the East and West Godavari districts of Andhra Pradesh. Constructed by the Hindustan Construction Company (HCC), this bridge is a modern day engineering feat and is strong enough to support high-speed trains. The bridge was opened for rail traffic in 2003.

Bridges on the Narmada river system

The Golden Bridge: Built by the British in 1881, this spans the Narmada River and connects Ankleshwar to Bharuch. The Golden Bridge was originally built for the Bombay–Baroda-Ahmedabad Railway Line to allow administrative officials easy access to Bharuch and for carrying freight. Despite its enormous cost of construction, it was not strong enough to support the load of freight trains. Hence, a new bridge was constructed for railways and the Golden Bridge was converted into a road bridge.

Bridges on the Brahmaputra river system

Kolia Bhomora Setu: is a pre-stressed concrete road bridge over the Brahmaputra River near Tezpur in Assam. Named after the Ahom General Kolia Bhomora Phukan, this 3015-metre bridge connects Sonitpur on the north bank with Nagaon district on the south bank.

Top: *The old Howrah Bridge*

Left: *Jubilee Bridge in Bali near Kolkata*

Saraighat Bridge: In 1962, Pt. Jawaharlal Nehru inaugurated the 1492-metre bridge that spans the Brahmaputra in Guwahati. It was the first rail-cum-road bridge to be constructed on the turbulent river. A new three-lane concrete road bridge is now being constructed beside it.

Bridges on the Krishna river system

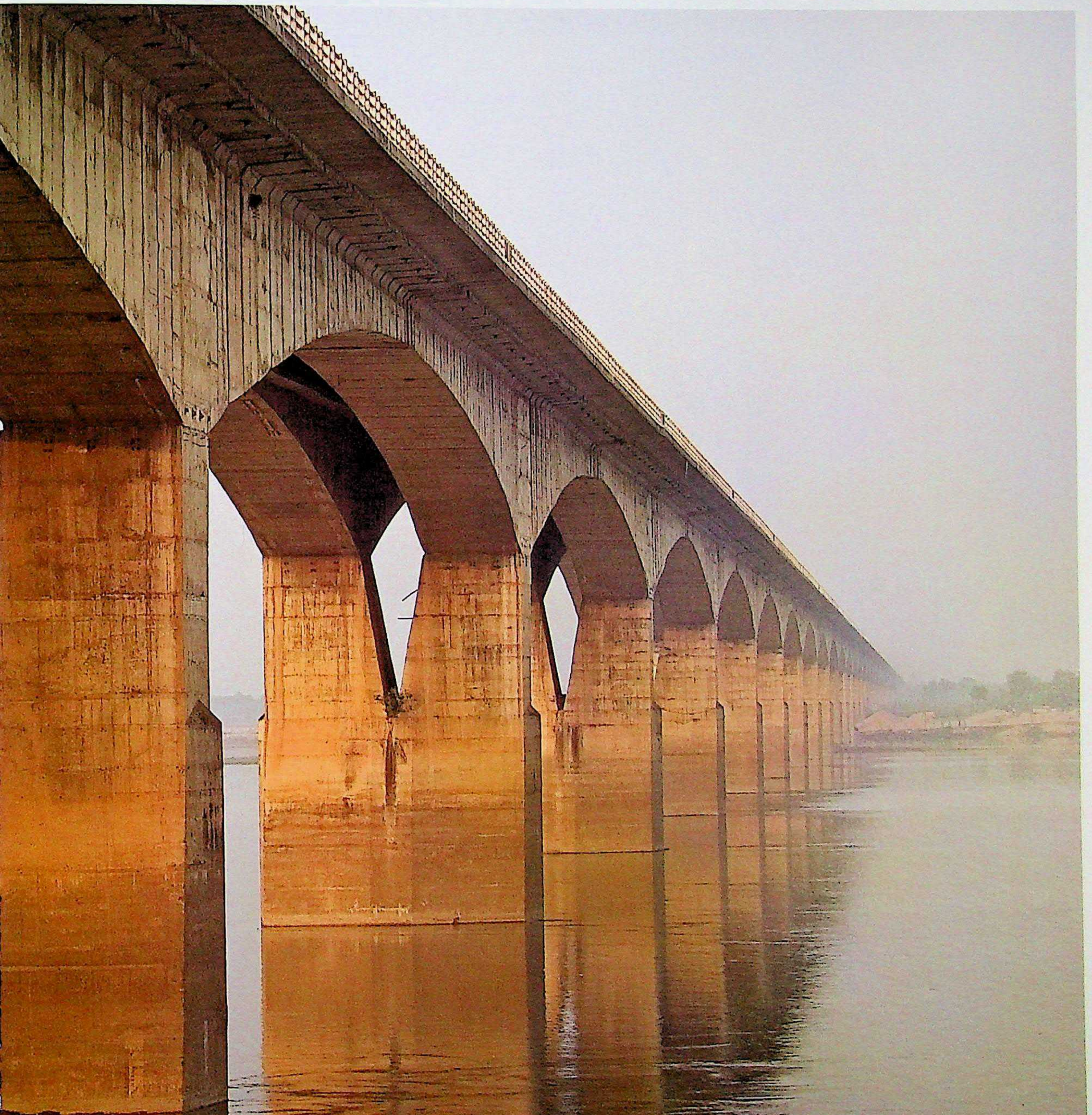
The **Prakasam Barrage**: Situated near the city of Vijayawada in Andhra Pradesh, this is an impressive 1223.5-metre long structure that stretches across the Krishna River, connecting the Krishna and Guntur districts. It also serves as a road bridge and provides panoramic views of the reservoir that it creates by damming the headwaters of the Krishna. The three irrigation canals that begin here cut through Vijayawada and give it a Venetian appearance. Completed in 1957, the barrage is one of the first major irrigation projects in South India and helps irrigate approximately 1.2 Million acres of land.

Irwin Bridge, Sangli: This is one of the largest bridges built on the river Krishna during the Raj era. Built of red sandstone, this bridge has two passages that descend to platforms supported by its middle pillars, providing a magnificent view of the river. The former Chief Minister of Maharashtra, the late Vasantdada Patil (who led the freedom struggle in western Maharashtra) escaped from the British army by jumping off the Irwin Bridge into the river below.

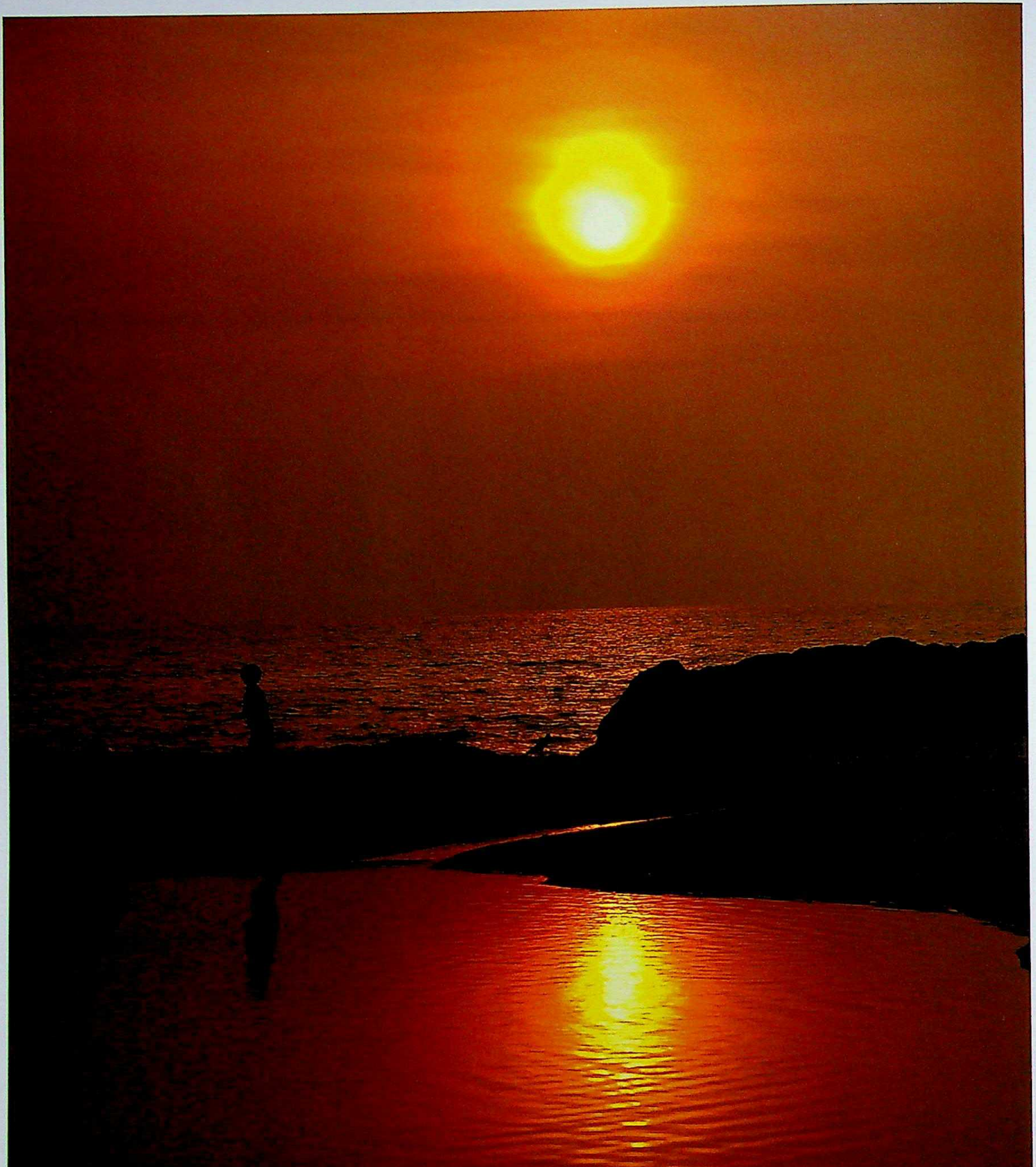
Bridges on the Mahanadi river system

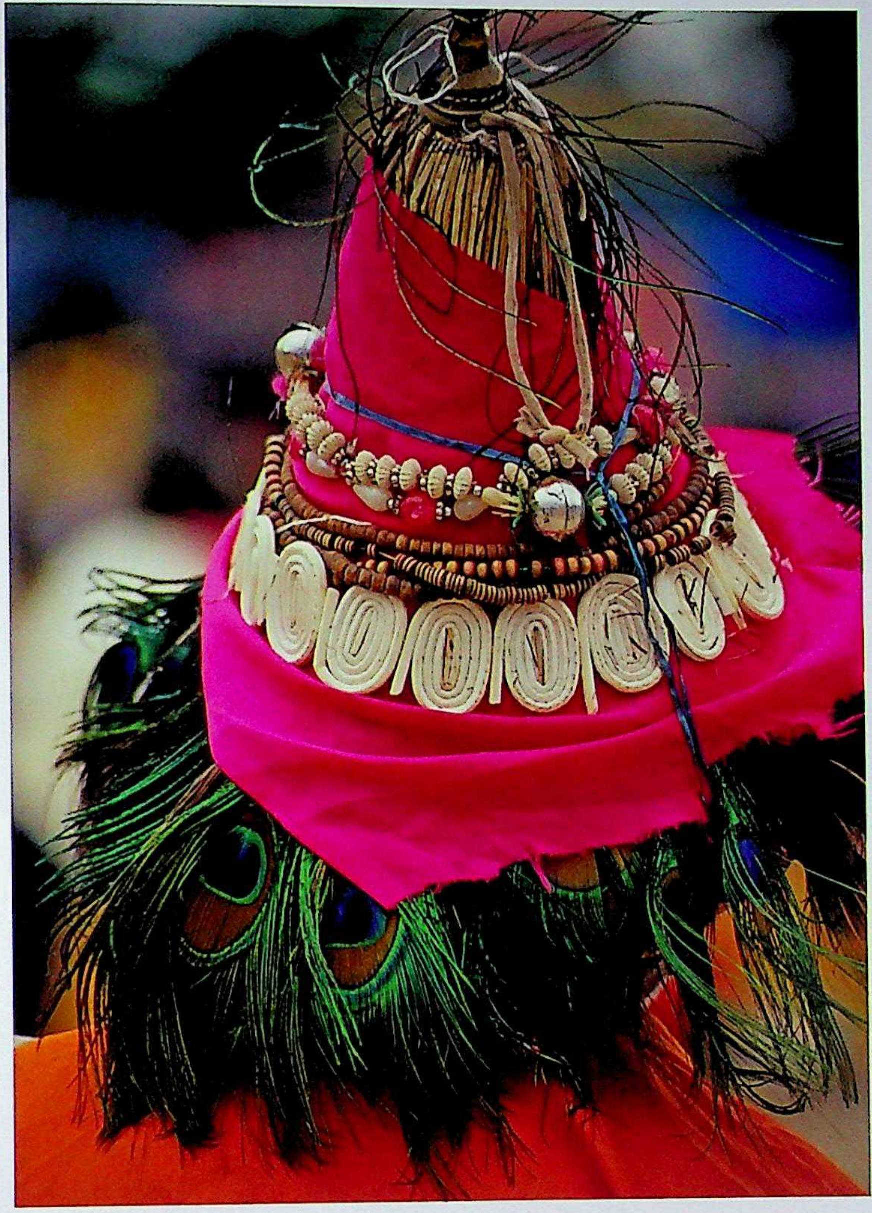
The Brahmini Rail Bridge: The construction of this bridge was a technological challenge at the time. It is estimated that at least 650,000 cusecs of water pass under it. An embankment of 2100 metres was required to confine the whole bridge to the span of the river. Twenty-nine spans of 150 ft girders are carried on piers resting on circular wells that are 77 ft. below the low water level. Construction material in the area was limited and a new quarry had to be established.

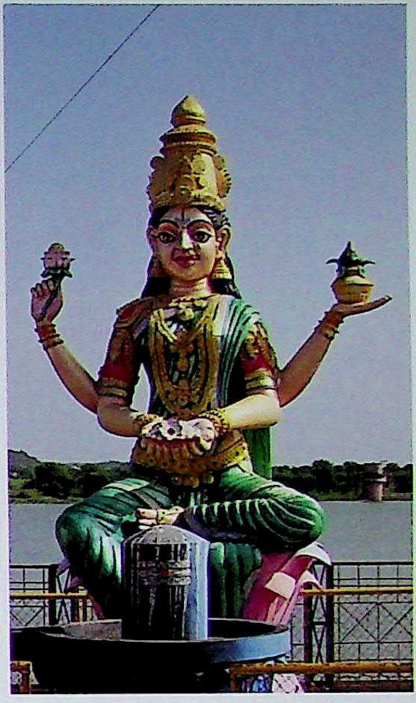
The Mahatma Gandhi Setu connects Patna in the south to Hajipur in north. Its length is 5,575 metres, which makes it one of the longest bridges in the world.



THE GODAVARI







In Andhra Pradesh, the town of Basar's claim to fame is its association with Saraswati, the goddess of learning. A statue of Saraswati and a shivling stand guard at the entrance to the ghats.

Left: A *Vasudev at the Kumbh. Mela in Trimbakesh, Maharashtra. Believed to be incarnates of Krishna, Vasudevs are conceived in the image of the playful deity. They wander about singing Krishna* bhajans *and beseeching alms.*

Pages 82-83: *The picturesque backwaters of the Jayakwadi Dam, in Paithan, Maharashtra.*

Facing page: *A minor tributary of the Godavari enters the delta and finally meets the sea close to Narsapur on the Andhra Pradesh coast.*

Below a stunted hill in the Western Ghats just north of Nasik, the quaint village of Trimbakesh embraces a few relics of Hindu religious architecture and a seemingly insignificant temple tank. This tank, not larger than a village pond is the mythical source of the Godavari. Many devotees are of the firm opinion that this is the singular source of the river. However, the watershed of the almost 1500 km long Godavari comprises of both the Eastern and Western Ghats.

The river starts its gentle descent on the slopes of the Brahmagiri hills above Trimbakesh and flows east across the Deccan Plateau through Maharashtra. It enters Andhra Pradesh in the Nizamabad district and continues its journey until it meets the Bay of Bengal through two separate channels in the Andhra delta.

A snack vendor at Narsapur, Andhra Pradesh.

In India, water bodies are greatly venerated and the Godavari is no different. All along its course, there are numerous places of pilgrimage that are redolent with many legends. One of these pertains to its mythological origins. Sage Gautama resided in a hermitage on the Brahmagiri Hills with his wife Ahalya. By virtue of his devotion to the chief of gods, he received as a boon, a certain bottomless well that yielded an inexhaustible supply of food grain. The other sages, jealous of his fortune, connived and arranged for a cow to enter his granary, and they caused it to die as Gautama tried to chase it away with a bundle of grass. The sage was inconsolable; the death of a cow at the hands of a Brahmin was an unthinkable act. The only way his sin would be absolved was if Ganga could be persuaded to visit his hermitage. However, this was not easy, as only Shiva possessed the power to convince her.

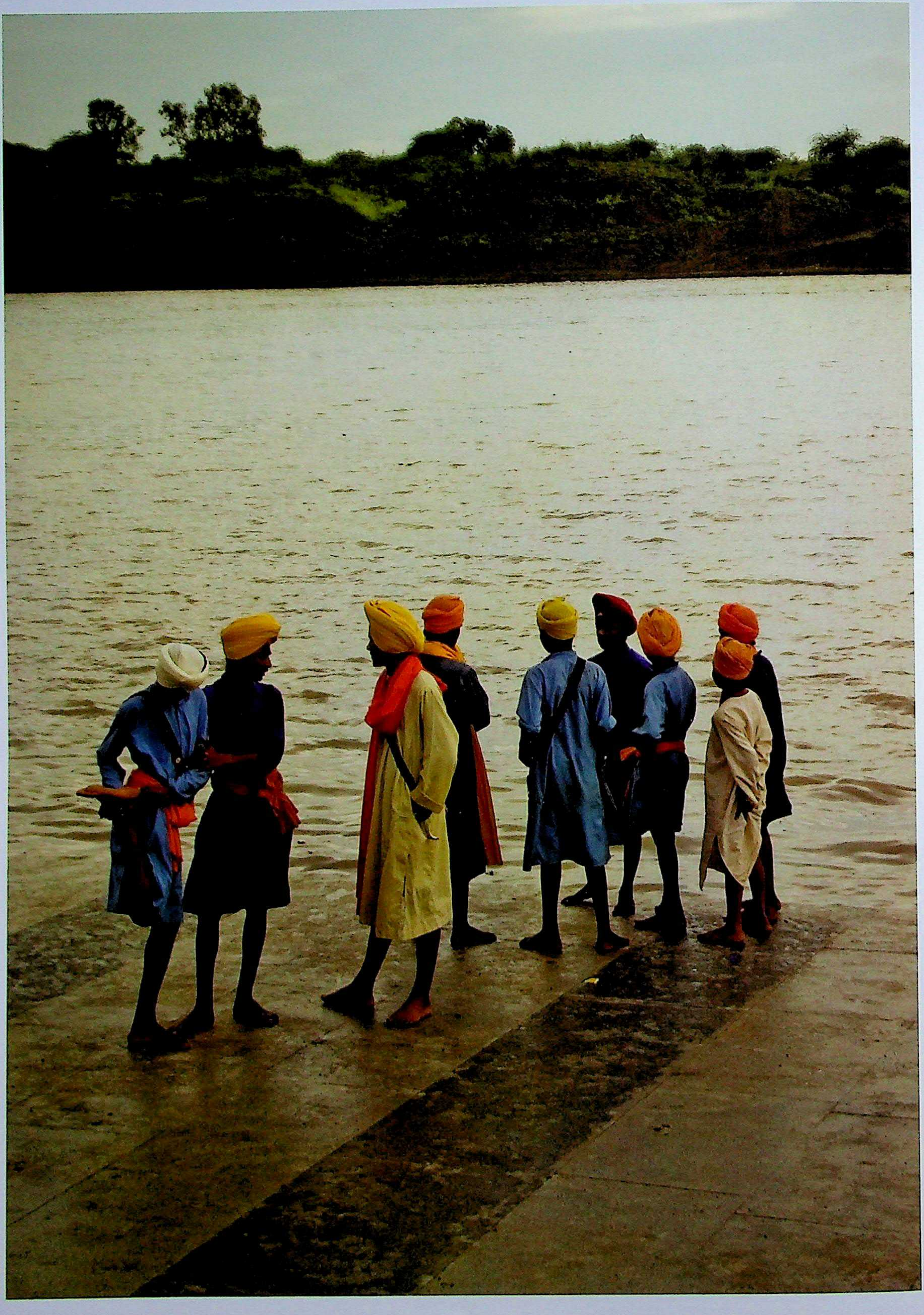
Gautama performed severe austerities to appease Shiva, who finally conceded to his prayers. Ganga then came down as the Godavari along with Shiva, who took the form of Tryambaka. The temple at Trimbakesh is dedicated to this legend and is one of the twelve Jyotirlinga shrines of Shiva. This is perhaps why the locals here refer to the Godavari as the Gautami Ganga. Both Trimbakeshwar and Nasik (30 km southeast) are venues for the Kumbh Mela, the largest religious gathering in the world.

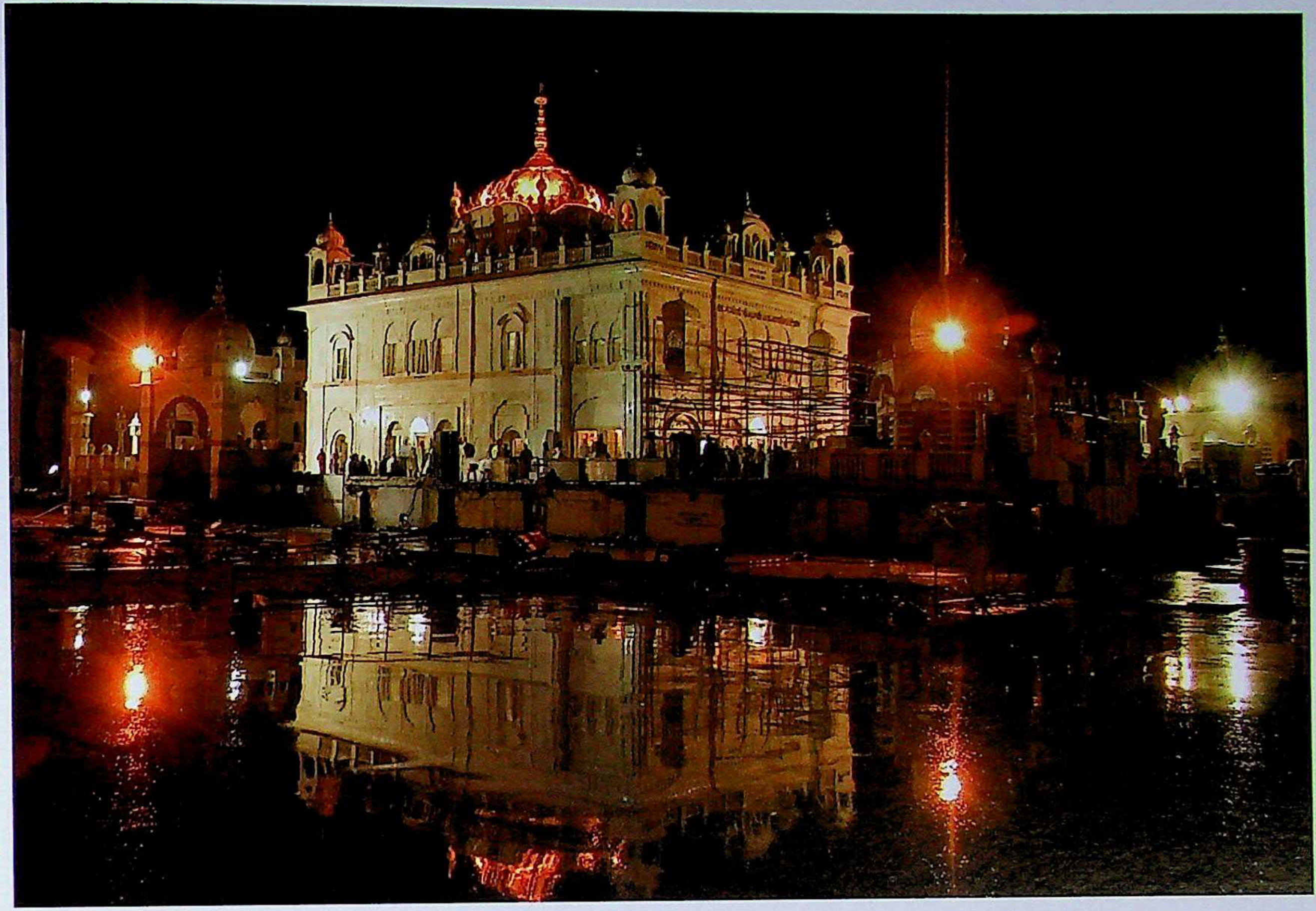
There are several small temples in virtually every corner of Dharmapuri, Andhra Pradesh. Every year on certain auspicious days, pilgrims come to bathe in the Godavari before paying obeisance at the various temples here.

While most Indian rivers are linked with Hinduism, the Godavari represents the secular face of India. Paithan, which is located 56 km south of Aurangabad, is associated with the Bhakti Movement and Jainism. It is believed that whoever visits the Digambar Jain Atishay Kshetra will have their wishes fulfilled. Paithan is also famous for its handloom silk saris (Paithani) which is the traditional bridal attire in Maharashtra. The Jayakwadi Dam near Paithan, which spans the Godavari, falls on the migratory path of Siberian Cranes and is popular with nature lovers.

Nanded, which is approximately 270 km southwest of Aurangabad, is renowned for its connection with Sikhism. In 1708, following the death of the Mughal monarch Aurangzeb, Guru Gobind Singh, the tenth spiritual leader of the Sikhs came here and proclaimed himself the last living guru. Takhat Sachkhand Sri Hazoor Sahib, where he breathed his last, is the most important Sikh shrine in Nanded. Although this draws the maximum number of Sikh pilgrims, there are numerous other gurudwaras and charitable schools for Sikh children along the Godavari.

From Nanded, the river meanders towards Vishnupuri, a village (10 km away) famous for the Shiva temple of Kaleshwar and the Vishnupuri Dam. The latter is one of the largest lift irrigation projects in Asia.





The Takhat Sachkhand Sri Hazoor Sahib Gurudwara in Nanded is one of the most sacred sites for Sikhs in India. It was here that Shri Guru Gobind Singh declared himself as the last living guru. He also breathed his last here, making the site particularly propitious.

Facing page: *Nanded has numerous Gurudwaras and charitable boarding schools for Sikh children. After school hours, the entire river front is full of frolicking youngsters in multi-coloured turbans.*

The Godavari continues its journey through a series of agricultural barrages before it enters the Nizamabad district in Andhra Pradesh. About 40 km from the district headquarters (of the same name) is the temple town of Basar. This town's claim to fame is its association with Saraswati, the Hindu goddess of knowledge. A Chalukyan era temple dedicated to her towers above the otherwise mundane landscape. Many pilgrims come here to perform the *akshara abhyasam*, a ceremony in which parents seek the goddess' blessing before children commence their formal education. This ritual begins and concludes with a dip in the Godavari. A statue of the goddess at the entrance of the ghats attracts both pilgrims and hawkers, and makes walking rather difficult. The boats by the water's edge provide a perfect respite from this chaos.

Dharmapuri, approximately 100 km from Nizamabad, has one of the largest settlements of Vedic Brahmins in Andhra Pradesh. Families here have zealously managed to cling on to their traditions and some still maintain the practice of reading Vedic hymns from ancient Talapatra scriptures. The people of Dharmapuri have a peculiar dialect, which is unique to this township. Temples of

The fertile estuarine region at the mouth of the Pamba River, Kerala.

Centre: *Floral offerings for the gods at Trimbakeshwar Temple, Maharashtra.*

various sizes, dedicated to virtually every god in the Hindu pantheon can be found here. Amongst them is the rare temple of Lord Dattatreya (Brahma's son).

As the Godavari continues its journey towards the delta, it passes through the temple town of Bhadrachalam, which is intimately linked with the life of Saint Bhadrachala Ramadasa. Known as Gopanna in his times, he was the tehsildar of Bhadrachalam during the latter part of the 17th century. Convicted of misappropriating funds from the government treasury to build a temple, he was imprisoned in the Golconda Fort. It is said that Rama and Lakshmana (protagonists of the Hindu epic *Ramayana*) appeared in disguise at the sultan's court and repaid the entire amount in gold. The king, realising that Ramadasa was no ordinary human being, freed him immediately. The singing saint who was part of the reformist Bhakti Movement has composed some of the most melodious Ram *bhajans* in Telegu. As you climb the temple steps, the air still resonates with the melody of his devotional songs.

Just before the river enters the delta, it flows through two prominent centres of pilgrimage, Pattiseema and Rajahmundry. While the former is famous for its association with Shiva, Rajahmundry, 18 km away is the site of the Godavari Pushkaram, a river festival celebrated once in 12 years.

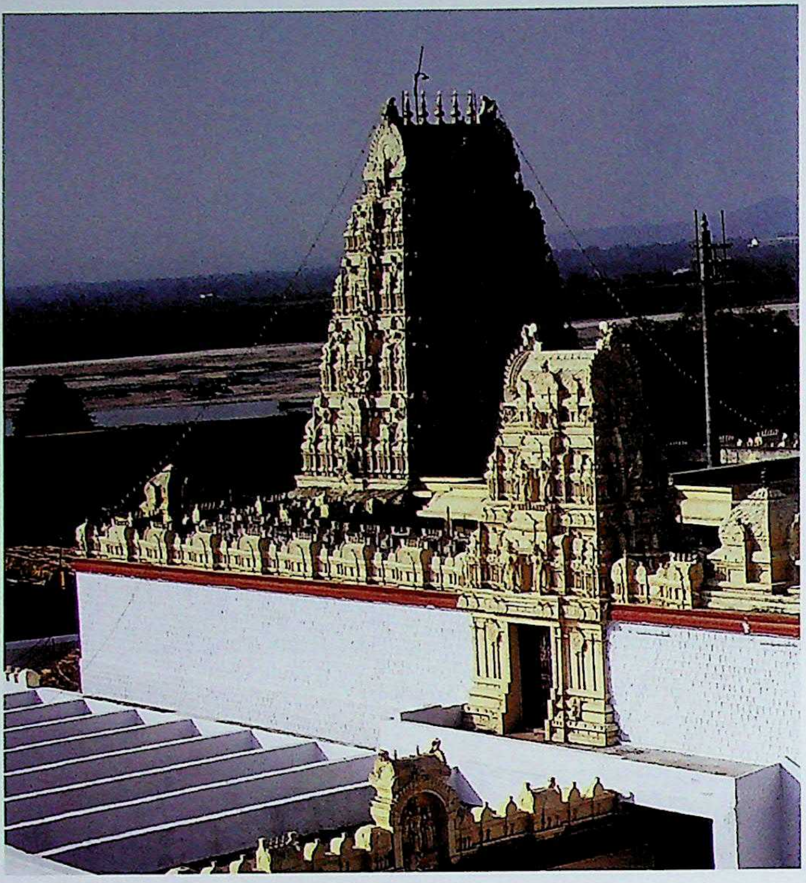
The Veerabhadra Swamy Temple dedicated to Shiva is sited on a hillock in the middle of the Godavari and is one of the most visited Shaivite shrines in Andhra Pradesh. There is a legend associated with the temple's origin. Shiva, aghast at seeing his

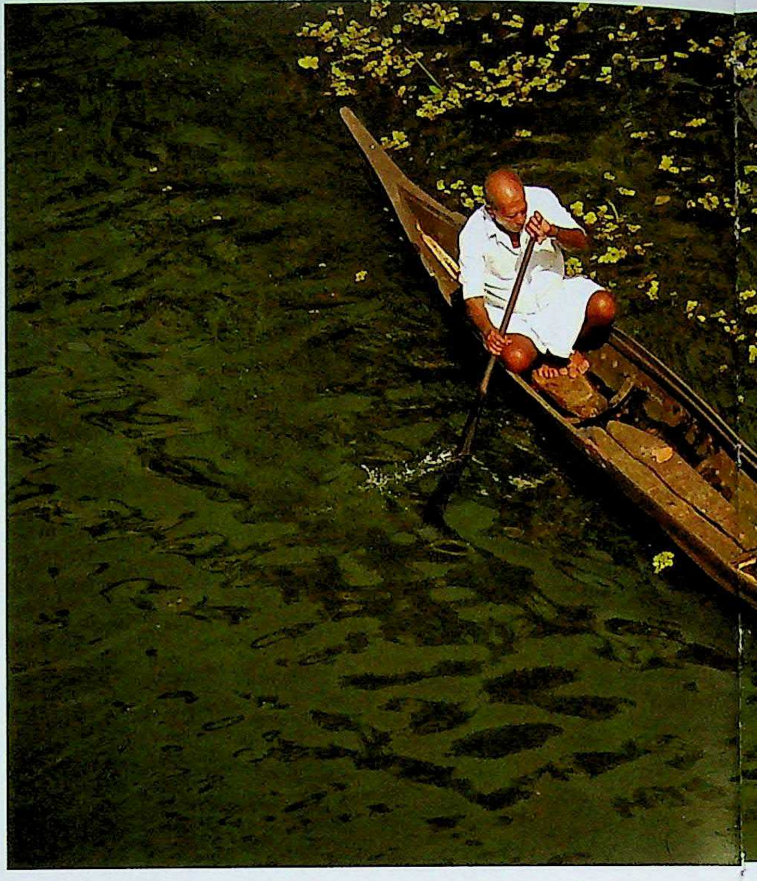
Vishnupuri, a village (10 km away from Nanded) is famous for the Shiva Temple of Kaleshwar and the Vishnupuri Dam.

wife being reduced to ashes in the *yajna* (sacrificial pyre) performed by his father-in-law Daksha Prajapati created Veerabhadra to avenge this insult. According to popular belief, Veerabhadra was born out of a lock of Shiva's hair that fell during his dance of destruction (*Tandav Nritya*). After destroying the *yajna*, Veerabhadra slew Daksha and threw the bloody sword into the Godavari. Although Daksha had committed the unthinkable, he was no mere mortal. He begged for forgiveness as his soul left for its celestial realm, and the benevolent Shiva forgave him. The place where he was felled bore a Shivaling, while a hillock emerged at the spot where Veerabhadra threw the sword. Today, this site has minor shrines dedicated to a plethora of deities. The festival of Mahashivratri (the great night of Shiva) is celebrated with great pomp and thousands of pilgrims throng to the hillock to offer prayers at Shiva's altar.

Every twelve years, around 30 million pilgrims take a holy dip in the Godavari during the Pushkaram festival. Many of them follow the river from Kaleswaram in Andhra Pradesh (Karimnagar district) to Antarvedi (East Godavari district) where it joins the Bay of Bengal. However, Rajahmundry, the seat of Telegu culture and literature, is where most of the devotees congregate. The star attraction here is the giant-sized *shivaling*. Water from the Godavari is channelled through a spout above the lingam and pilgrims bathe in its shower.

Pushkarams have a profound spiritual significance for Hindus, who have a tradition of worshipping rivers. They believe that a dip during this auspicious period will invest one with providence.





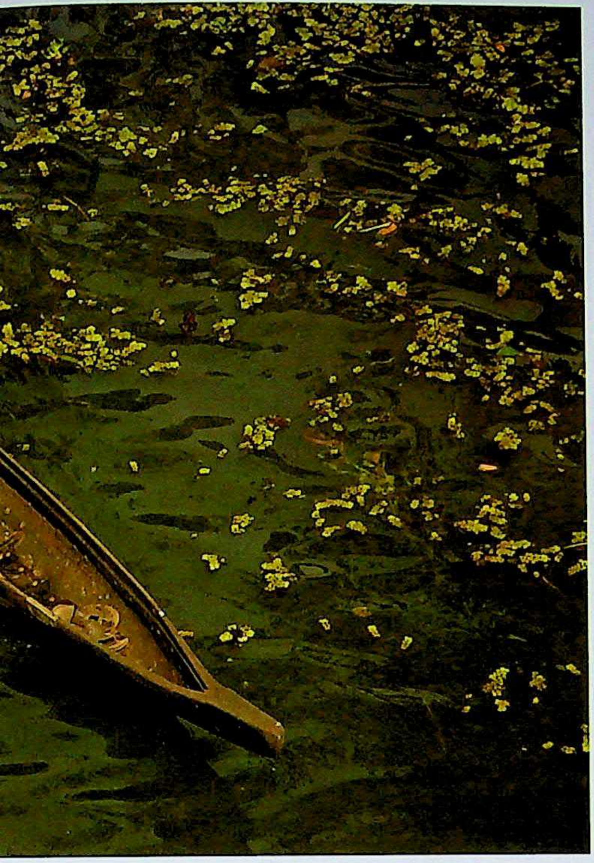
The Sree Seetha Ramchandra Swamy Temple at Bhadrachalam on the banks of the Godavari is an important pilgrimage centre for Hindus. The presiding deity here is Lord Rama.

Centre: *A boatman on the lower reaches of the Godavari.*

Just 70 km from Rajahmundry towards Kakinada lies a unique biodiversity zone. The Coringa Wildlife Sanctuary sited along the backwaters of the Coringa River is famous for its mangrove forests that harbour species like the estuarine crocodile and sea turtles. The sanctuary also plays host to many endemic and migratory birds.

While the concept of a river interlinking across state borders is just a mirage considering the political divisions and sheer economic costs of such a project, it has been accomplished within Andhra Pradesh on a more modest scale. Numerous canals crisscross the delta connecting the Krishna to the Godavari, making this combined basin one of the largest rice producing regions in the country.

In its final course, the Godavari turns southeastward and empties into the Bay of Bengal via its two channels: the Gautami Godavari to the north and the Vashistha Godavari to the south. The shoreline where the two channels of the Godavari meet the sea have lost their importance as ports; however, they still sustain fishing communities. The serenity of the beach belies its violent relationship with nature; every monsoon this region is battered by numerous cyclones. But the skeletons of boats strewn along the shoreline do not deter the fishermen who ready their *navas* (sailboats) and head out to sea.



A flower seller at Trimbakesh.

Today, the biggest challenge faced by deltas along the east coast is erosion and the Godavari delta can lose up to 23 percent of its landmass by 2050. Groundwater pumping is a major cause of subsidence and storms are a constant threat to a region that has few coastal defences. While deltas are naturally vulnerable because they form in low-lying coastal regions, human activities add to the peril. The rate of retreat is directly related to population and economic exploitation. Dams and canals upstream also contribute to the problem, as they prevent sediment from reaching the delta. The Krishna Godavari basin is rich in fossil fuels. Petroleum extraction from beneath the delta is causing the sediment-starved land to sink further. This is also responsible for the waterline along the deltaic region to rise faster than average global sea levels. If this trend continues, agriculture may not be economically viable here in the future.

Pollution, over-population, and unsustainable exploitation of resources are slowly taking a toll on the Godavari. The question then is, who should take guardianship of the river? Until the people of the Krishna-Godavari basin introspect and harmonise their relationship with nature, the Godavari will continue to suffer.

THE KAVERI

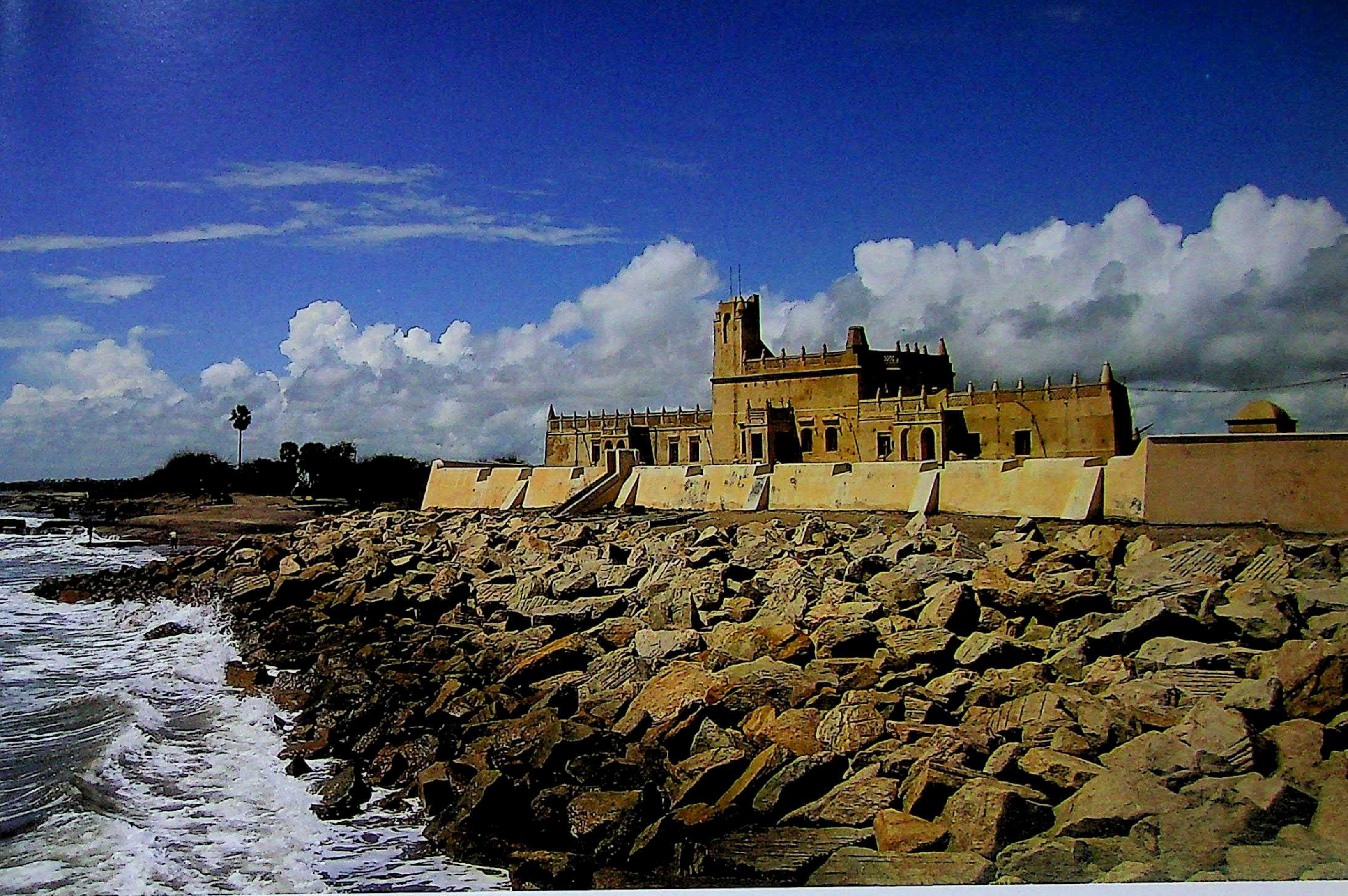
RAMRAJ
RAMRAJ
COTTON
DHOTIES
SHIRTS
BANIANS
NALLI'S
BRANCH
WEDDING
ITALY
KKE C 1346
GOLDEN EGH

A typical fishing village in coastal South India, near Kanyakumari, Tamil Nadu.

Pages 94-95: *At Hogenakkal in Tamil Nadu, the Kaveri River creates numerous waterfalls as it cuts across the rocky terrain. In places, the cascades drop almost 20 metres and are said to sound like continuous thunder.*

The Kaveri is to South India what the Ganges is to the north; no other southern river can claim to have a closer camaraderie with Hinduism. This has aptly earned the Kaveri the epithet of 'Dakshin Ganga' or the Ganges of the south. Soaring temple towers and relics of ancient Hindu kingdoms can be found all along her banks, where successive kingdoms of the Hoysalas, Cholas, Cheras and Pandyas chose to build their magnificent monuments. This historical association is barely visible in her upper course. But once the river reaches the plains, this link becomes apparent. Despite its modest length of 765 km, it is the lifeline for the people of Southern Karnataka and the Kaveri Basin of Tamil Nadu.

The river begins its journey in the Brahmagiri Mountains in the Coorg district of Karnataka. Its source is a spring that rises at 1320 metres above sea level in Talakaveri, where a temple dedicated to the legend of its origin stands. From here, the river flows in a south-easterly direction through the undulating landscape of the Deccan Plateau before descending the Eastern Ghats in a series of spectacular falls. On entering Tamil Nadu, it forms two islands,



Fort Dansborg in Tranquebar, Tamil Nadu was built as early as 1620 AD. *It is one of the few surviving relics of Danish architecture in India. The native name for Tranquebar, Tharangambadi means "place of the singing waves", as it is located near the mouth of the distributary of the Kaveri River.*

Srirangapatna and Shivanasamudram. While crossing the latter, the river plummets 97.5 metre (320 ft), creating the famous Shivanasamudram Falls.

Like most rivers in India, the Kaveri too is associated with numerous legends. According to one such story, all the gods, goddesses and sages gathered at Mount Kailash to celebrate the marriage of Shiva and Parvati. The weight of this mammoth celestial gathering caused the land to dip. Shiva requested the renowned sage Agastya to travel to the Podhigai Range in southern India to stabilize this imbalance. Before the sage departed, Shiva took the river Kaveri out of his matted locks and filled the sage's *kamandalam* (snouted brass vessel). He instructed her to flow in the direction of the sage's bidding.

Unknown to the sage, a demon named Surapaduman had been terrorizing the gods. Indra (king of the gods) was forced to leave his kingdom and take refuge in a place called Sirgazhi where he prayed to Shiva for help. He created a magnificent garden and showered Shiva with floral tributes every day in a bid to appease him. Unfortunately, Varuna (the god of sky and water) was also

The Grand Anicut is an ancient dam built across the Kaveri River in Tamil Nadu. It was built by the Chola king Karikalan around the 2nd Century BC and is considered as one of the oldest water diversion structures in the world still in use.

terrified of the demon's powers and in his fright, he forgot to direct the rain clouds to Sirgazhi. As a result, all the flowers in Indra's garden wilted and he was deeply distressed.

Sage Narada could not bear to see Indra's despair and informed him that Kaveri had taken abode in sage Agastya's *kamandalam*. But Indra was not sure how to find the sage and get him to release the river, so he requested Ganesha for help. The clever elephant-headed god took the form of a crow and flew to Agastya's ashram. On noticing the *kamandalam*, he sat on it and toppled it over. The sage raised his hand to shoo the crow away, but Kaveri presumed this to be a signal to start flowing.

The Puranas also give a vivid account of Kaveri's origins. When the gods and demons churned the ocean to obtain the elixir of life, Vishnu took the form of the bewitchingly beautiful Mohini to distract the demons and restore the elixir to the gods. Lakshmi,

Coorg, or Kodagu, lies on the eastern slopes of the Western Ghats. Set amidst verdant valleys, imposing mountains and teak forests, this is one of the most beautiful hill stations in India. It is also the watershed for numerous rivers, including the Kaveri.

the goddess of wealth also sent a demigoddess by the name of Lopamudra (an incarnation of Parvati) to assist Mohini. After the elixir was successfully restored to the gods, Mohini retired to the Brahmagiri Hills and turned into a rocky cave, while Lopamudra was raised by Brahma as his daughter.

Some time after this, a king by the name of Kavera came to the Brahmagiri Hills for spiritual solace. Kavera was lonely and prayed to Brahma for a child. Pleased with his devotion, Brahma gave him Lopamudra for a daughter. The girl was renamed Kaveri after her father.

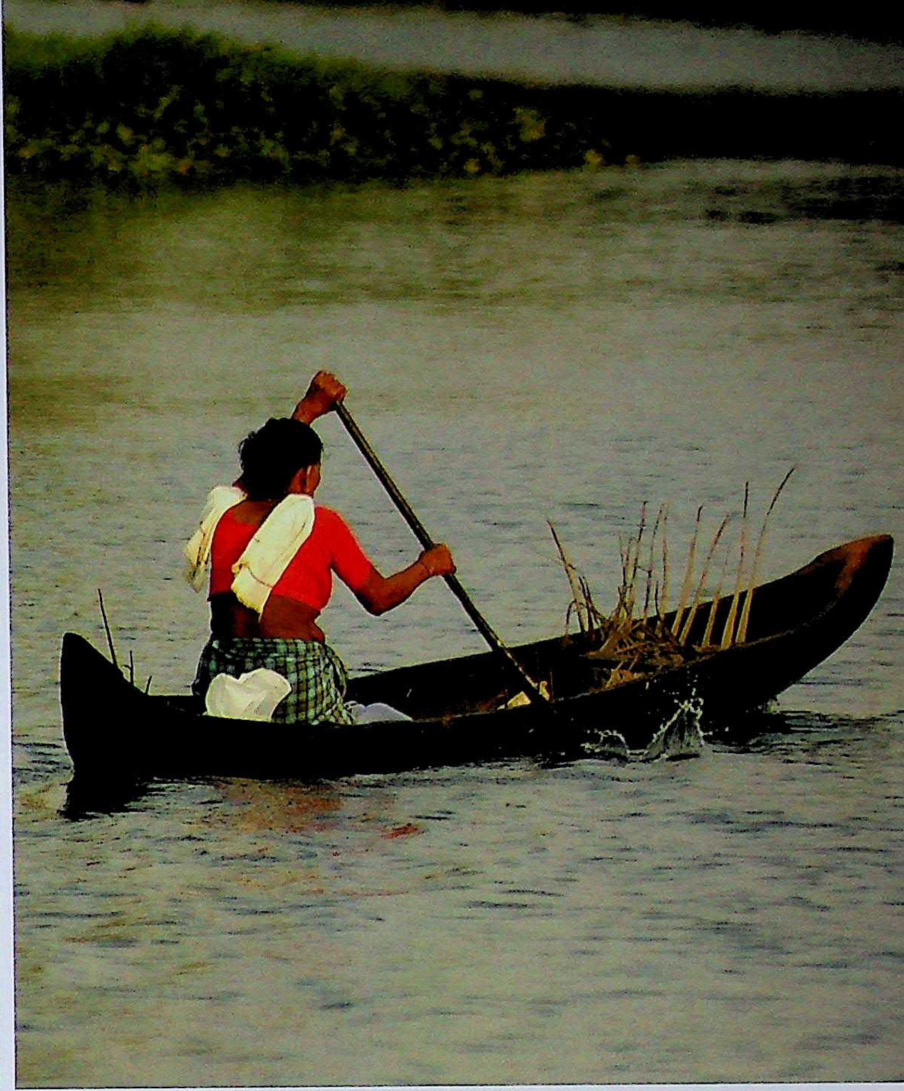
Kaveri wanted her father's kingdom to be blessed with eternal riches and contentment. So she went to the Brahmagiri Hills and prayed to Brahma that she be turned into a river that could flow through her father's province, showering blessings on the people and making the land fertile. She prayed that her waters be endowed

Used aerated water bottles being transported on a boat along the Periyar River in Kerala.

Centre: *Many stretches along the Kaveri are so shallow, that they can only be negotiated by coracles.*

with such sanctity that anyone taking a dip in it might be absolved of their sins. Brahma granted her both boons readily, but, something else was destined to happen in the meantime. Sage Agastya, who chanced upon Kaveri when she was deep in prayer, fell in love with her and expressed his desire to marry her. Although her heart was set on turning into a river of blessings, Kaveri could not refuse the sage. However, she made him promise if he ever left her alone for too long, she would have the right to forsake him and go her way. Agastya managed to keep his word faithfully for some time. One day, deep in discussion with his disciples, he completely lost track of time. Kaveri waited patiently, but after some hours had passed, she jumped into Agastya's *kamandalam* and flowed out of it. As soon as the disciples saw this, they tried to stop her, but Kaveri disappeared underground and emerged again at Bhaganda Kshetra before flowing on towards Valambari and merging with the Bay of Bengal.

After regaining her riverine form, Kaveri observed another penance to Vishnu and was consequently adorned as his garland, which made her the most sacred among rivers. It is believed that



Kerala's river networks are interwoven with numerous lagoons and a boat is the only way of getting around. Virtually every family along the river owns a small canoe.

even the Ganges makes a subterranean visit to Kaveri once a year, to purify herself. Vaishnavites affectionately regard her as the mother of Ranganayaki, the heavenly consort of Lord Ranganatha of Srirangam, making this one of the most frequented shrines in southern India.

Its source at Talakaveri is equally popular with pilgrims for the restorative powers of the spring and the fabled beauty of the Brahmagiri Hills. An endless cyclorama of tea and coffee plantations amid the rolling hills swathed in mist make it a very popular holiday destination. The Kaveri that flows through these parts also attracts anglers who come here in the fond hope of landing a Golden Mahseer that can sometimes grow to a length of nine feet. From here, the river runs past the Buddhist settlement of Kushal Nagar. Once a refugee camp for Tibetans, it is now a major centre for cultural tourism.

In 1924, a dam was constructed over the Kaveri near the historic town of Srirangapatna. Named after the late Krishnaraj Wodeyar, the erstwhile ruler of Mysore during whose reign the construction was undertaken, the lake encompasses a catchment area of almost

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Used aerated water bottles being transported on a boat along the Periyar River in Kerala.

Centre: *Many stretches along the Kaveri are so shallow, that they can only be negotiated by coracles.*

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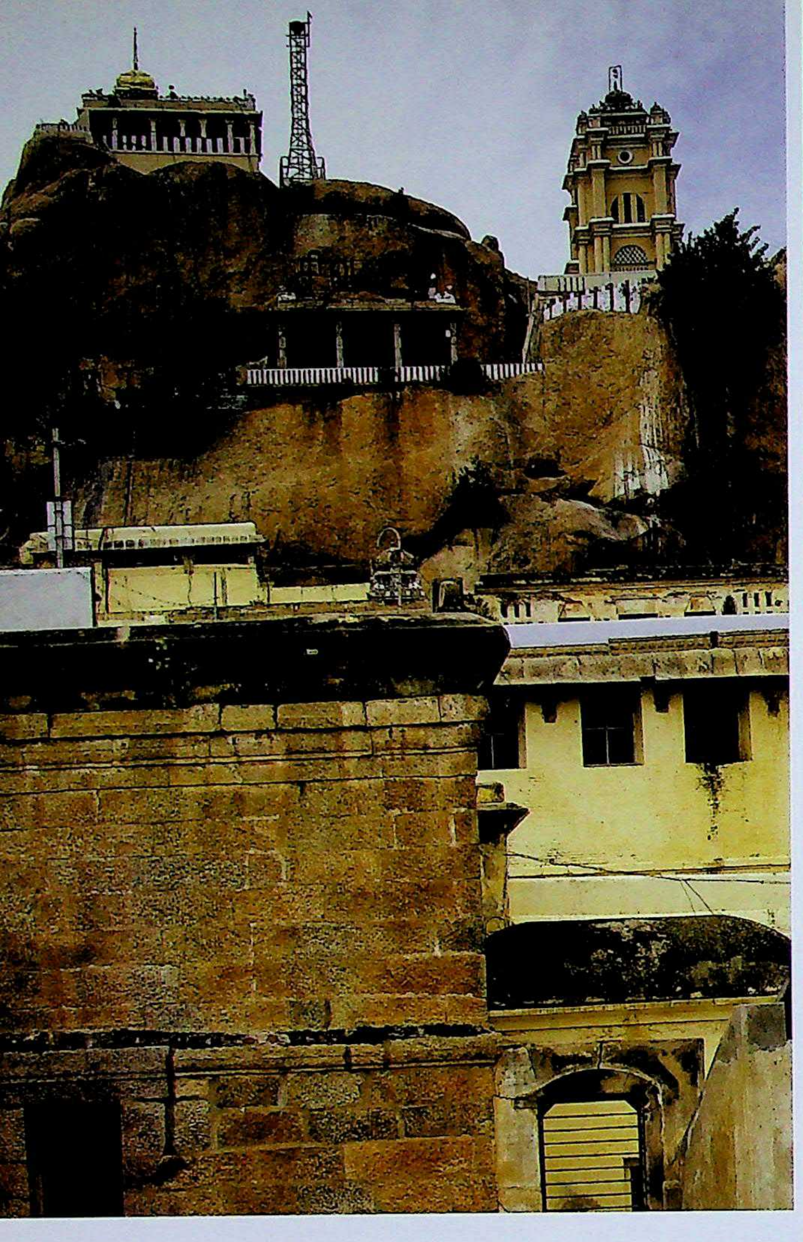
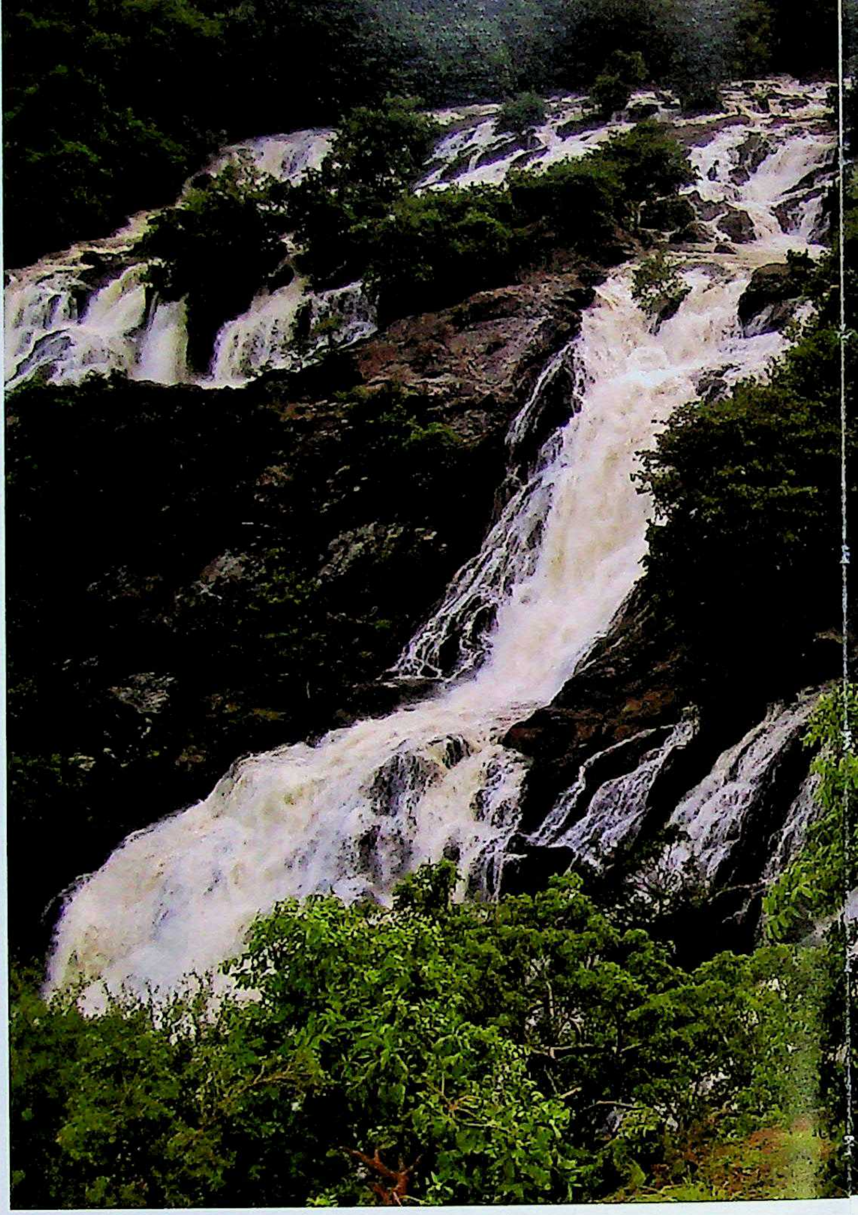




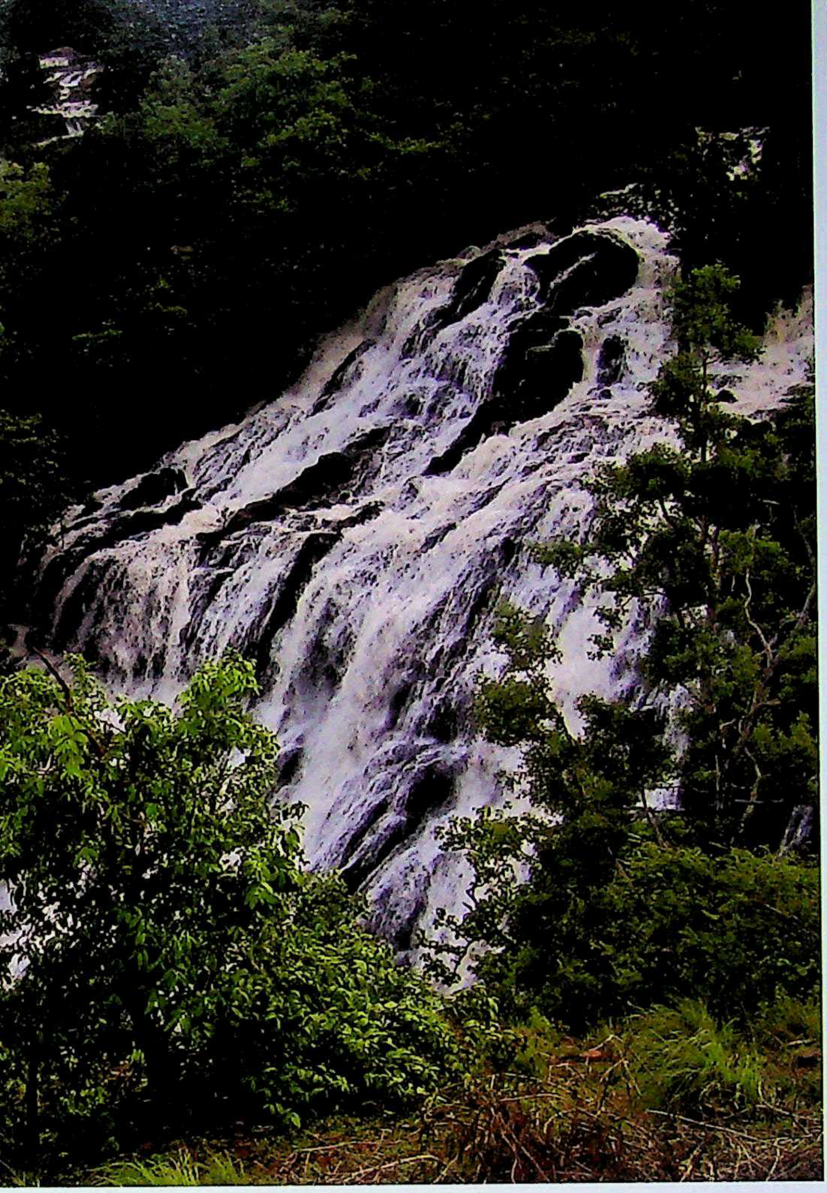
The 83m high Rock Fort is the only hillock in the otherwise flat city of Tiruchirapalli located on the banks of the Kaveri River, in Tamil Nadu. 344 steps hewn out of rock lead to the top where inscriptions dating back to the 3rd century BC *still survive. Hardly anything remains of the fort ramparts but the main entrance is intact. The fort played an important role during the Carnatic wars.*

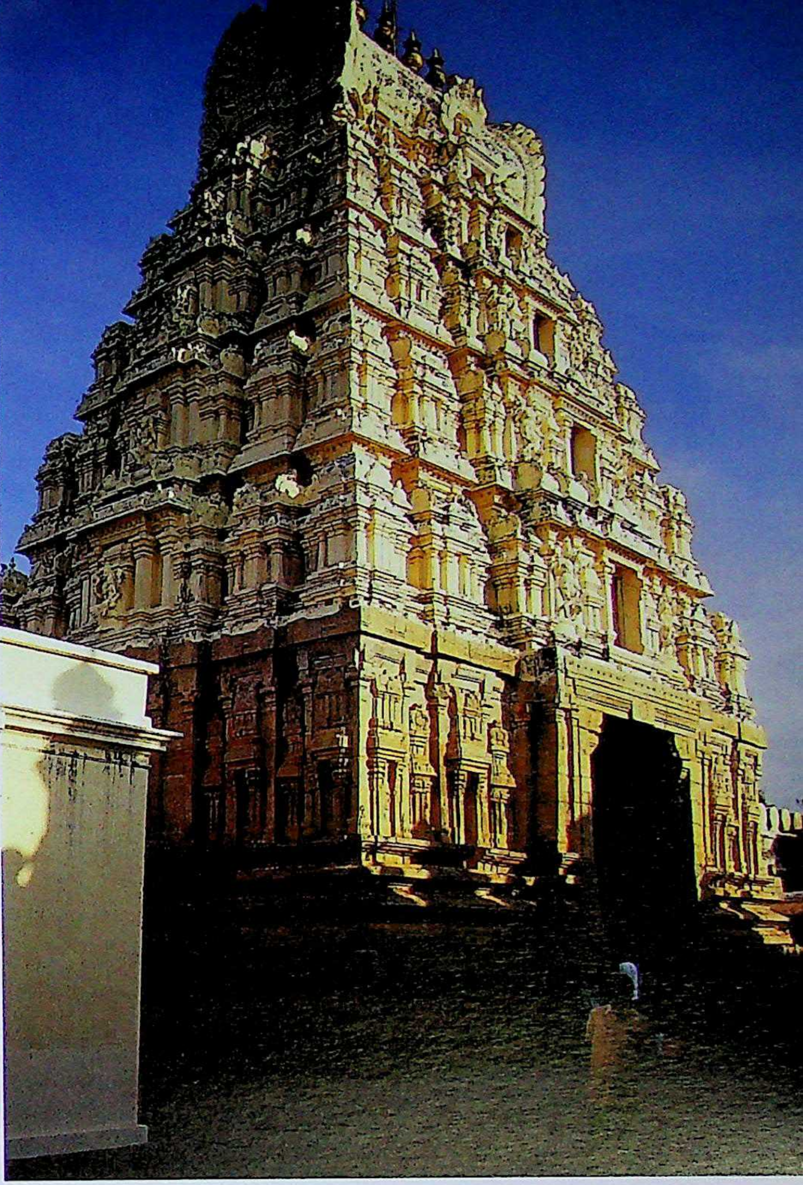
Centre: *The Shivanasamudram Falls in Mandya, Karnataka, are a classic example of segmented waterfalls, which occur when the flow of water is broken up into multiple channels before dropping over a cliff.*

75 sq km. The reservoir provides a steady supply of water to the hydroelectric station at Shivanasamudram, ensuring an uninterrupted supply of power to the twin cities of Bangalore and Mysore and the Kolar gold mines. It also irrigates about 1, 20,000 acres of semi-arid land in the Mandya district.

Just 14 km from Mysore, the island of Srirangapatna that is embraced by the Kaveri is synonymous with Tipu Sultan and his historic struggle against the British. His valiant battle against the East India Company in 1799, which resulted in his demise, paved the way for the reinstatement of the Wodeyar Dynasty on the throne of Mysore. It also ended the resistance of Indian principalities in south India against the British, which eventually led to British hegemony. Today, a small plaque marks the spot where the Sultan fell to a sniper's bullet.

The Kaveri has also been a witness to the vagaries of nature. The strangest mystery of the Kaveri is associated with the once vibrant temple township of Talakad, most of which lies buried under





The riverine island of Srirangapatna in the Mandya district of Karnataka takes its name from the famous Ranganathaswamy Temple which dominates the town. This is one of the most important Vaishnavite Centres of pilgrimage in South India.

mounds of sand. While locals allege that this was due to the curse of a vengeful queen, geologists believe that the course of the river changed due to tectonic upheaval. It is possible that this, combined with strong winds, gradually deposited vast quantities of sand along the banks and in due course of time, the town was buried. The excavations are almost two kilometres away from the river and the only way of exploring this shallow stretch is by a coracle.

From here the river becomes rather erratic. Minor tributaries meet the Kaveri just before it enters the Dharmapuri district of Tamil Nadu and together they negotiate the last major leap of the Eastern Ghats creating the Hogenakkal Falls. Once the river descends into the plains of Tamil Nadu, it meanders in the southeasterly direction to form the headwaters of the Mettur Dam and the Stanley Reservoir.

Originally, the Mettur Dam provided irrigation and power to the districts of Salem, Erode, Namakkal, Karur, Tiruchirappali and Thanjavur. Unfortunately, the construction of new dams on

Talakad is a town on the left bank of the Kaveri River at a spot where the river makes a sharp bend. It once had more than 30 temples that are now buried in sand.

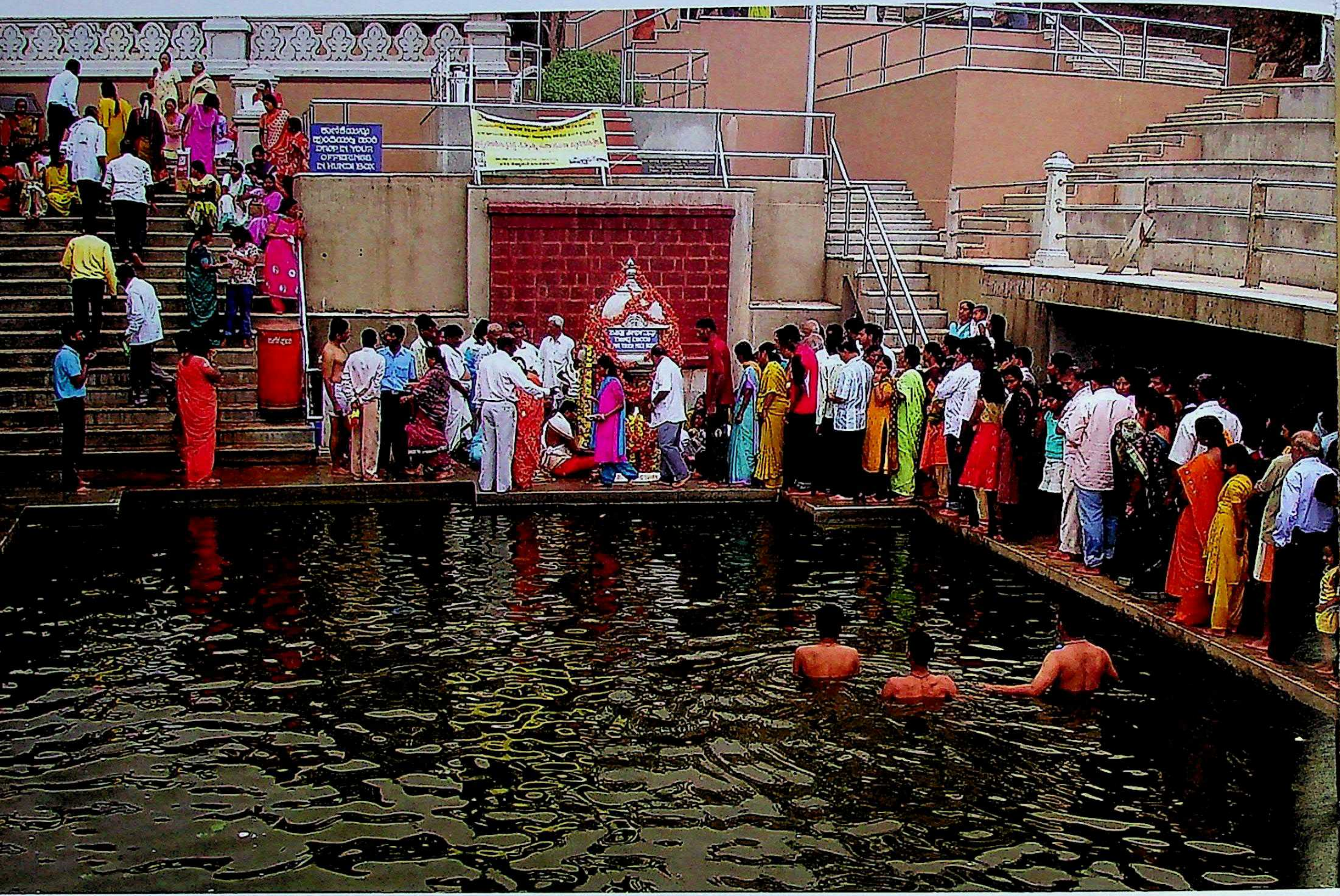
the Kaveri in Karnataka has reduced the supply of water to Mettur and this is the basis of the Kaveri water dispute between the states of Karnataka and Tamil Nadu. In the summer months, the low water level of the dam makes it impossible to feed the irrigation canals. Despite a Supreme Court judgment favouring Tamil Nadu, the Cauvery Tribunal has so far been unsuccessful in persuading the Government of Karnataka to release sufficient water into the dam. Being a favourite political topic in both states, tensions run high with farmers, film stars and politicians quarrelling over the pros and cons of water sharing.

From Mettur, the river traverses past a pastoral landscape until it reaches the city of Erode where the Bhavini, a tributary of the Kaveri merges with the main stream. Erode is known for its textile products and is often referred to as the powerloom city of India. Beyond Mettur, the Kaveri flows past some of the most sacred and historical sites in Tamil Nadu. Between Tiruchi and Thanjavur, there are about 300 Shiva temples on the banks of the river, among them the temple complex of Srirangam is the largest.

The city of Tiruchi or Tiruchirapalli is named after the three-headed asura Tirusiras who obtained a boon from Shiva. The rock (once part of a fort) that overlooks and dominates the city is said to have fallen down from Kailash following an altercation between the king of snakes, Adi Sesha and the lord of wind, Vayu. Hence, the city is also known as Dakshin Kailash or the Kailash of the south. The Rock Fort provides a grand view of the Kaveri and the island township of Srirangam (one of the largest temple complexes in southern India). Spread over 156 acres with a perimetre of four km, the temple complex comprises of seven concentric walled sections and 21 colourful *gopurams* or towers, which are visible even from a distance.

Srirangam is also famous for the stone and earthen revetment on either side of the river, which was constructed almost 1600 years ago by the Chola king Karikalan. He undertook the task of constructing floodwalls along the lower course of the Kaveri from Poompuhar to Srirangam and the Kallanai Dam on the border between Tiruchirappali and Thanjavur. In the 19th century, the height of the dam was increased and its name has since been changed to the Grand Anicut. Even today it plays a major role in irrigating the Thanjavur district.

Kumbakonam is one of the oldest towns in Tamil Nadu. Embraced by the Kaveri and Arasalar Rivers, this picturesque town is famous for its temples. In the 7th century it was the capital of the Chola kings.



Tala Kaveri (a spring in the Brahmagiri Hills) is considered to be the source of the Kaveri River. A tank has been erected on a hillside at its point of origin. It is also marked by a small temple which is frequented by pilgrims.

Although the river passes through the temple towns of Thanjavur and Kumbakonam, all the major Chola monuments, including the grand Brihadeeshswara Temple and the colourful shrines of Kumbakonam, are far away from the river. Except for a few bathing ghats, there is little evidence of the glorious Dravidian architecture along the banks of the Kaveri here.

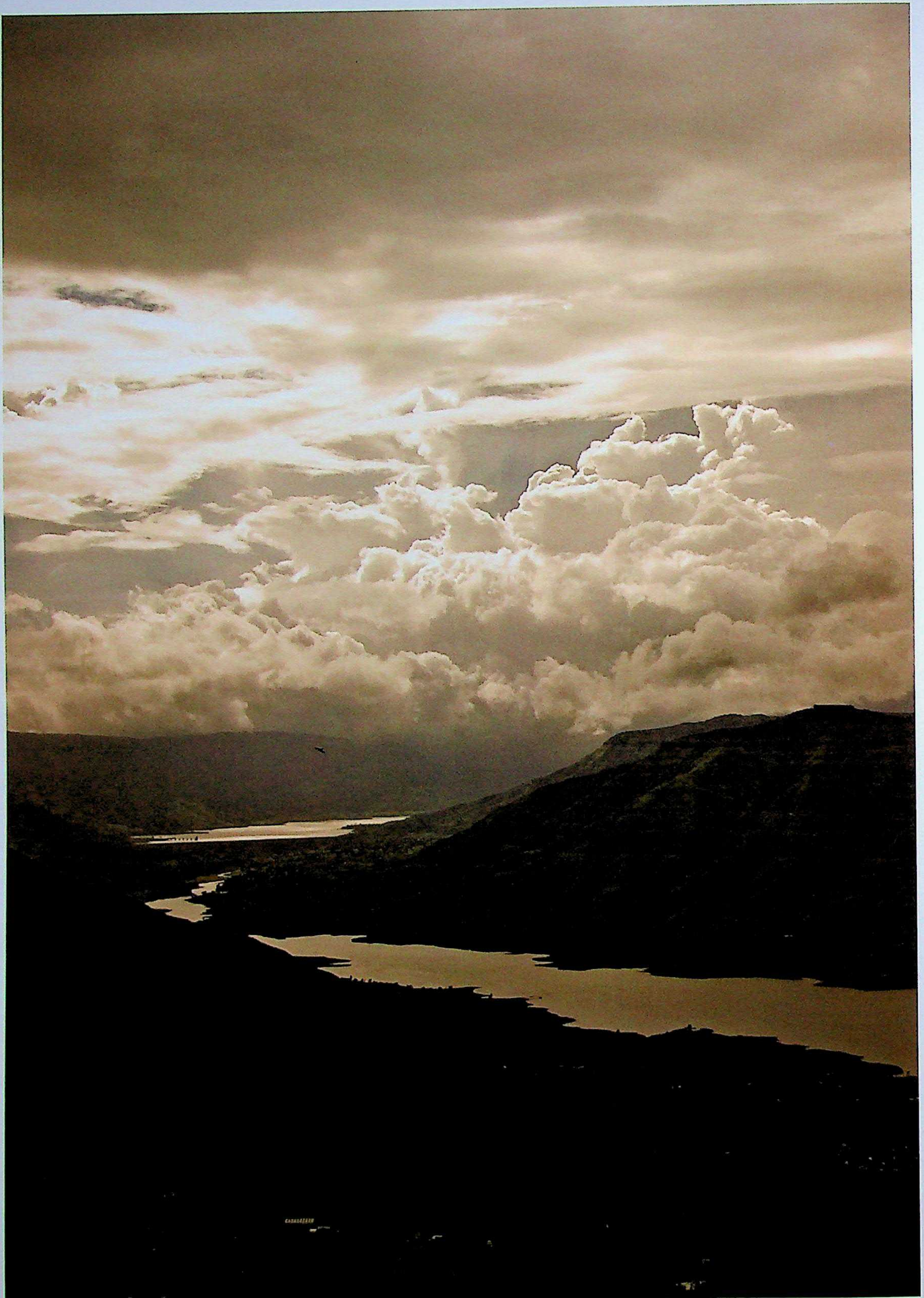
The last important town on the Kaveri, where the river meets the sea, is Poompuhar. This once flourishing port city was also known as Kaveripattinam and served as the capital of the Cholas for a brief period. Believed to be one of the more prosperous cities in ancient south India, many of the town's historic sites were washed away when a massive tsunami struck it in 500 AD. This theory is supported by a chapter in the Tolkappiyam (the oldest surviving Tamil treatise on grammar) written around the same time. Another tsunami that struck the Tamil Nadu coast in 2004 did further damage to the historical relics in the coastal town.

Old pillars mark the site of a now decrepit jetty in Poompuhar.

According to ancient descriptions, it is believed that Poompuhar was a planned city. Seafarers inhabited the areas close to the seafront, while the town centre had terraced mansions and warehouses. The king, his nobles and army occupied a portion of the town known as Pattinappakkam, which was surrounded by beautiful gardens. Today the glory of the once splendorous city is preserved only in myth.

Legends flow with the Kaveri towards the sea. The wooden hulled merchant ships no longer sail in bringing precious merchandise. However, if you look carefully, you can still spot an ancient bollard and the sails of the wooden catamarans against the setting sun. The songs of the fisher folk can still be heard alongside the cacophony of sea gulls trying to steal fish. The story of the Kaveri ends here.

THE KRISHNA



In the quaint hill station of Old Mahabaleshwar on the slopes of the Western Ghats is a shrine dedicated to Shiva. The Adi Mahadeva Temple appears unassuming from the outside; however, as soon as you enter it, a profoundly interesting sight greets you. The Krishna river that rises in these hills flows through subterranean passages and exits through the snout of a stone Nandi (celestial bull). The water that drains into a tank in the inner courtyard of the temple disappears underground once again, until it reaches the edge of the Mahabaleshwar Plateau. Here it descends into the Krishna/Koyna Valley as a series of waterfalls.

This temple is considered the mythical source of the Krishna. With such close proximity to its geographical origins, this is not surprising. Although the river emerges from the snout as a thin stream, it becomes a behemoth of many tributaries, which merge

Idols of Hindu gods are bathed in the river before offering prayers in Satara, Maharashtra.

Facing page: *The Krishna River as viewed from the Panchagani Plateau.*

Pages 108-109: *The meandering Krishna as seen from the hill station of Panchagani in Maharashtra.*

Kudala Sangama in the Bagalkot district of Karnataka is an important centre of pilgrimage for people of the Lingayat faith. The Krishna River and its tributary the Ghataprabha merge here and flow east towards Srisailam, which is one of the twelve Jyotirlinga shrines dedicated to Shiva.

with it along its course, making it one of the largest river systems in the country. The 1300 km long Krishna is the lifeline of Maharashtra, Karnataka and Andhra Pradesh. For centuries, it has been a witness to the rise and fall of various kingdoms in the Deccan and South India.

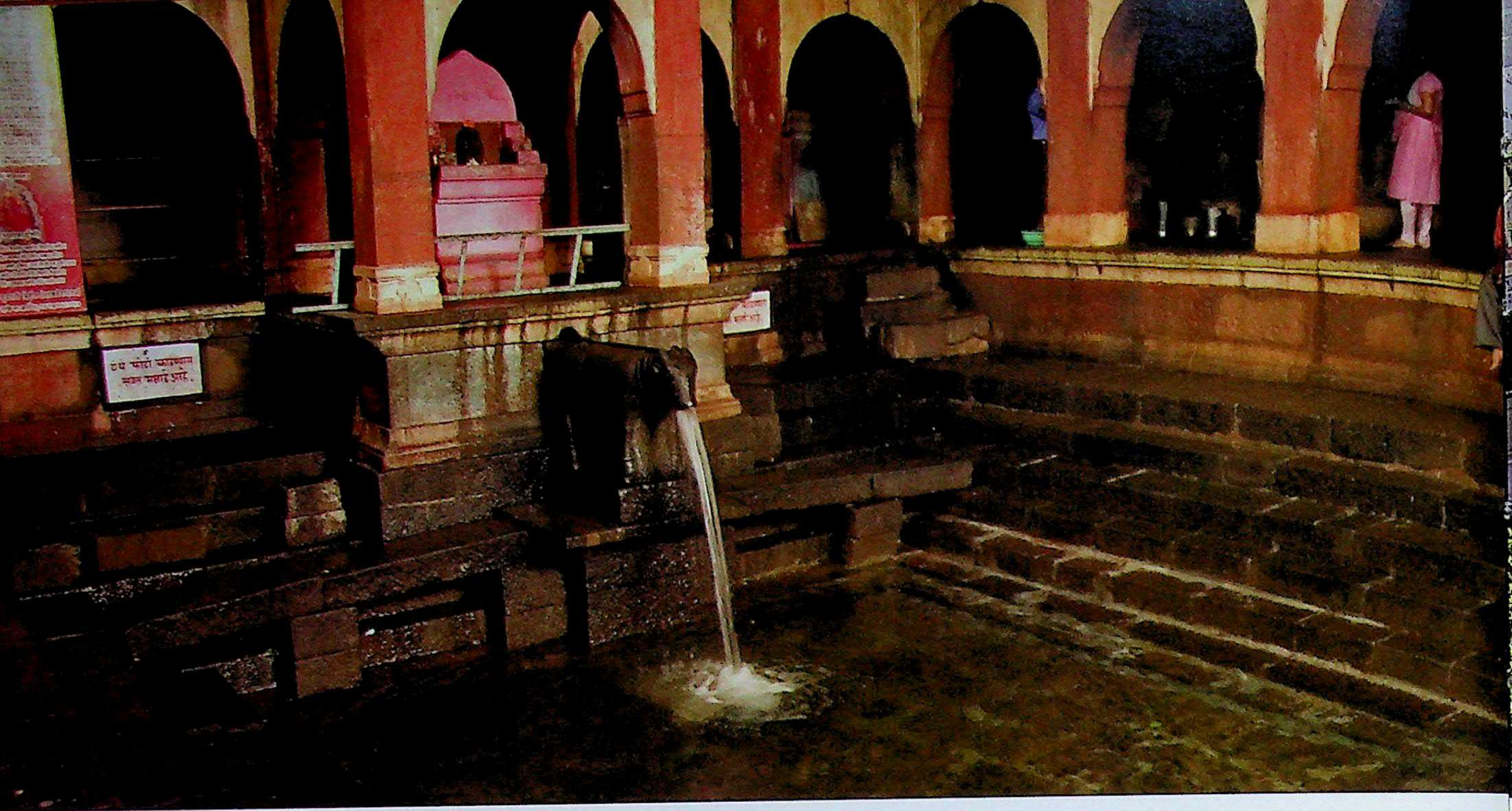
There is a fascinating legend associated with the origin of this river. It is believed that the river is an incarnation of the Hindu god Vishnu who was turned into a river due to a curse. Enamoured by goddess Parvati's beauty, Vishnu could not resist the temptation of seducing her and magically took the form of her husband Shiva. Upon discovering his true origins, Parvati cursed him—as a consequence, he was transformed into a female river. Strangely, Krishna's tributaries the Vena and Koyna are believed to be incarnates of Shiva and Brahma respectively.

Due to its association with the Hindu Trinity of Brahma, Vishnu and Shiva, several centres of pilgrimage have flourished along the banks of the Krishna and its tributaries. However, these are mere relics of its association with Hinduism. To see the real power that it holds over those who believe in its sanctity, one should participate in the Krishna Pushkaram.

An interesting myth is associated with this festival. Tundila, a devout Brahmin priest performed severe austerities to gain the favours of Shiva and finally won the right to serve as one of his principal companions. Shiva who was then in his riverine form (one of his eight incarnations) was perplexed about choosing a mortal as his companion, as the priest would certainly drown in his company. Instead, he decided to make Tundila the caretaker of all the water bodies in the universe. The priest earned the title of 'Pushkara' (one who caters to the needs of the world).

Pushkara was very judicious in performing his duties; however, he was entangled in a celestial controversy. Brahma (the creator) desperately needed water to realize his dream of a perfect universe. As Pushkara was the sole guardian of all the water resources, Brahma had to persuade Shiva to let him live in his *kamandalam*, which Pushkara eventually agreed to. However, this is hardly the end of the controversy. The Vedic god Brihaspati also wanted to share the responsibility of creation. Therefore, he too requested Shiva to place Pushkara under his command. Although his wish was granted, Pushkara refused to oblige, as he did not want to

The Krishna-Godavari basin is one of the world's largest rice producing regions.



This snout in the Panchganga Temple is the mythical source of the Krishna River in old Mahabaleshwar.

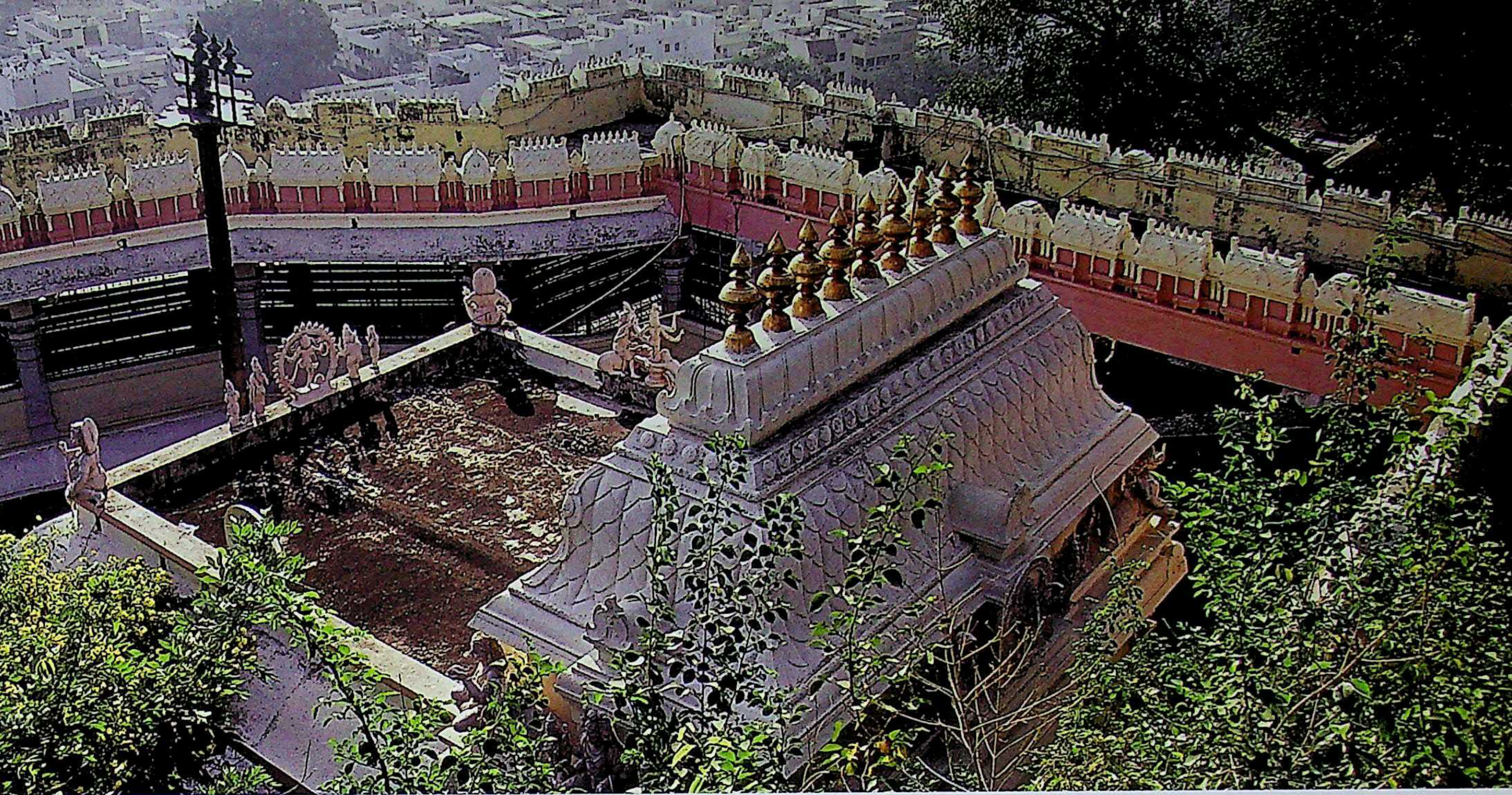
leave Brahma's side. He put forth the condition that if he were to help Brihaspati, Brahma would have to accompany him.

Brahma resolved this delicate situation with ease. It was decided that Pushkara would stay with Brihaspati for a length of two *muhurthams*, (an auspicious time) for 12 days when the latter was entering a particular zodiac sign and 12 days when he was exiting it. Brahma, accompanied by all the other gods, would sanctify the holy river, which Brihaspati was visiting during this stipulated period. In this way, Pushkara could serve both Brahma and Brihaspati.

During the Pushkarams, devotees undertake purification rituals that usually conclude with a holy dip. They also pay homage to their departed ancestors in an elaborate *shradh* ceremony in a bid to appease their spirits.

Another famous river festival on the Krishna coincides with the end of the Dusshera festivities. The Bhavani Diksha involves a lengthy 41-day prelude to the main event that eventually unfolds at Durga Ghat in Vijayawada. Devotees of Kanaka Durga (patron deity of Vijayawada) live like ascetics and perform various Vedic rituals during this period. On the last day of the festival, thousands of pilgrims in flaming red garments throng to the banks of the Krishna for a holy dip.

Rivers have played a central role in Hindu belief and in the Indian context, it is impossible to disassociate religion from the

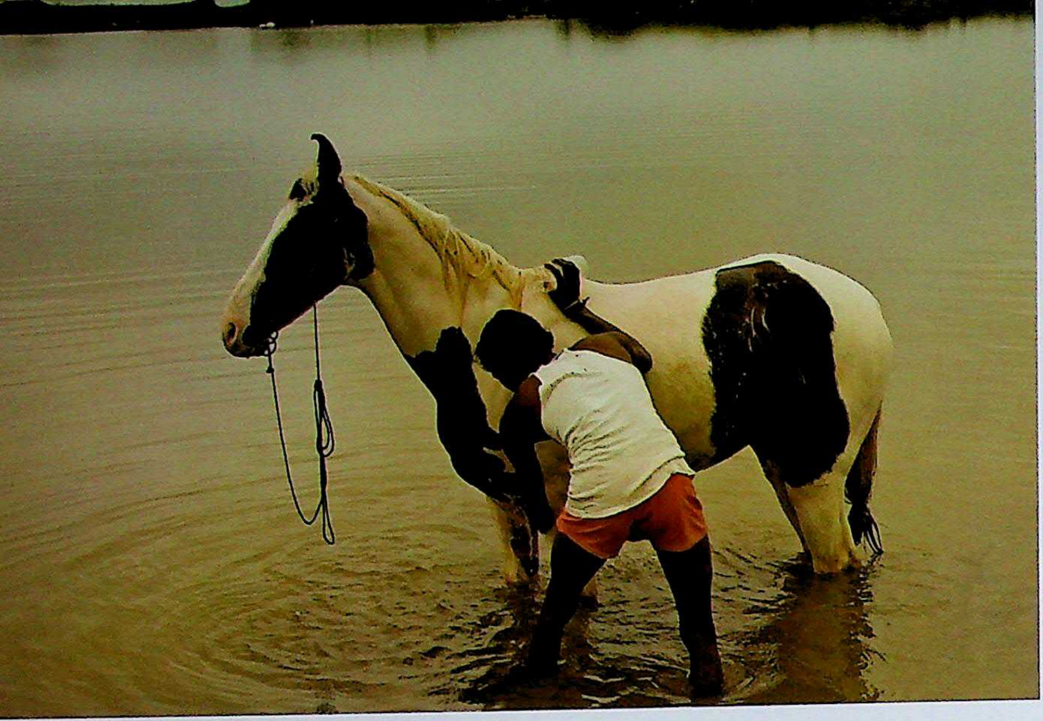


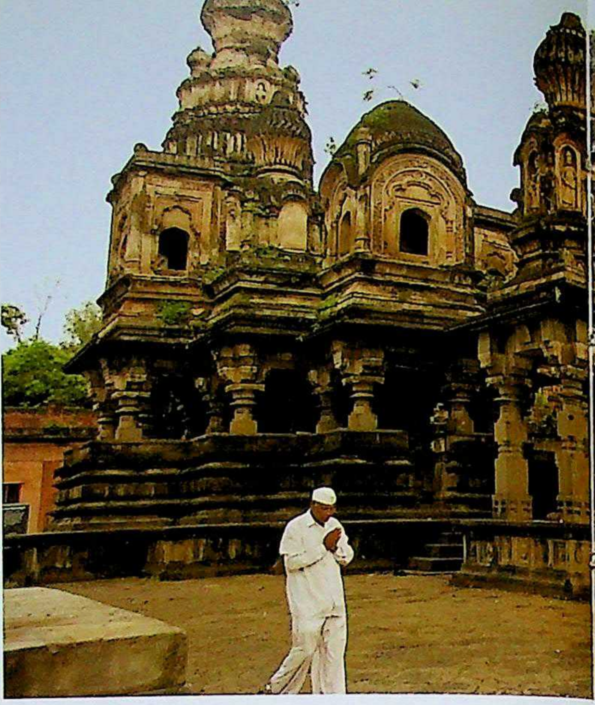
In the Kanakadurga Temple, Kanakdurga, the goddess of riches, power and benevolence is considered the patron goddess of Vijayawada, a prominent centre of pilgrimage on the banks of the Krishna.

rivers. However, we have to realise that the rivers have supported civilizations long before the concept of religion emerged. There are numerous historical sites along the Krishna's course. Satara, which lies below Mahabaleshwar, is most famous for its association with the Marathas and their epic battles against the last Mughal emperor Aurangzeb. Its pre-medieval history dates back to the rule of the Gupta Empire followed by the reign of the Satvahanas. The Deccan style temples on the banks of the Krishna (at Satara) are comparatively recent.

Jamkhandi in Northern Karnataka is renowned for its Chalukyan monuments, which includes the 1000-year-old temple of Jambukeshwar (an incarnation of Shiva). Srisailam in the Kurnool district of Andhra Pradesh is one of the twelve Jyotirlinga shrines of Shiva while Nandikonda and Amravati have numerous Buddhist relics. Vijayawada, which has emerged as the epicentre of Andhra culture, has been historically associated with the Chalukyas of Badami.

The Krishna, which has supported numerous civilizations over the centuries, continues to sustain a vast population. With its 35 tributaries, it irrigates a large agricultural zone, making the region naturally attractive to commercial exploitation. While agriculture has always been the primary economic activity, large-scale industrialisation is a reality that the people of the Krishna Valley have to concede with. Both farming and industry depend on the





A horse and his master enjoy a bath in the Krishna river at Narsobawadi Maharashtra.

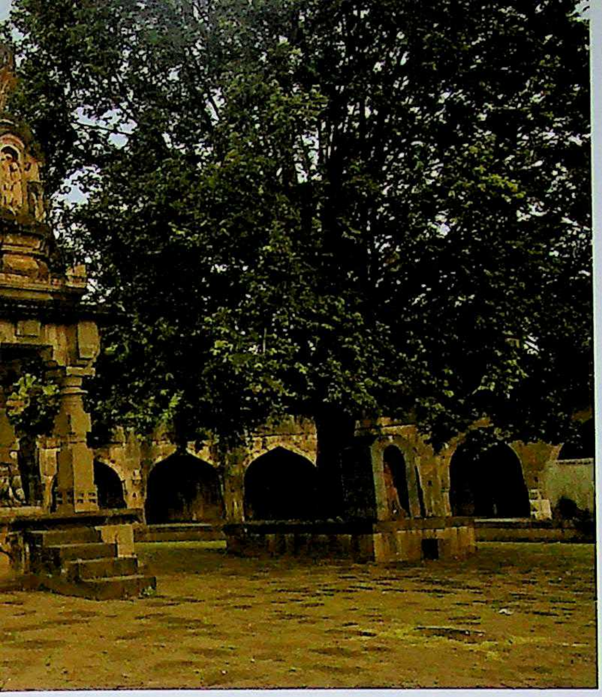
Centre: *The Radhashankar Temple on the banks of the Krishna River at Sangam, Satara.*

availability of land and water. This is where the conflict begins; the acquisition of agricultural land for industry is one of the most debatable issues today. The lax laws on the treatment and discharge of industrial effluents intensify the problem. The co-existence of industry and agriculture has led to disastrous results in the past. Large tracts of arable land along the Krishna basin have been rendered unfit for agricultural use due to untreated industrial discharge and other pollutants.

While the population has been rising rapidly over the years, the amount of water available has remained constant. In areas where the aquifer is depleted faster than its annual rate of replenishment, we actually have less water than we had a decade ago. Adding to this problem is the fact that most of our rivers are also used as drainage systems for domestic and industrial waste. The sheer combined volume of the Krishna and its tributaries only means that this problem is multiplied to uncontrollable levels.

The Krishna river system receives effluents and wastewater from several large cities, which include Pune, Satara, Kolhapur, Hyderabad, Kurnool and Vijayawada among others. More than 500 important industrial units operate from the Krishna basin, 200 of which are large-scale industries.

To cite an example of the environmental damage caused by industrial effluents, one has to visit Dharwad on the banks of the Tungabhadra, an important tributary of the Krishna. Here two units of the Gwalior Rayon Silk Manufacturing Company Ltd (Grasim) generate approximately 33,000 cubic metres of effluents.



Numerous picturesque agricultural villages dot the landscape of Panchgani, Maharashtra, along the Krishna River.

Villagers downstream were affected by the increased level of pollution as soon as the plant was commissioned, but the worst hit were the fisher folk. Fish stocks were nearly wiped out from the lower reaches of the Tungabhadra. While numerous committees were set up to look into the grievances of these fisher folk, hardly anything came out of it. In 2002, after a prolonged legal battle that lasted eight years, these fishermen received a meagre individual compensation of two thousand rupees. Today, completely disheartened, many of them have migrated to the cities in search of livelihood.

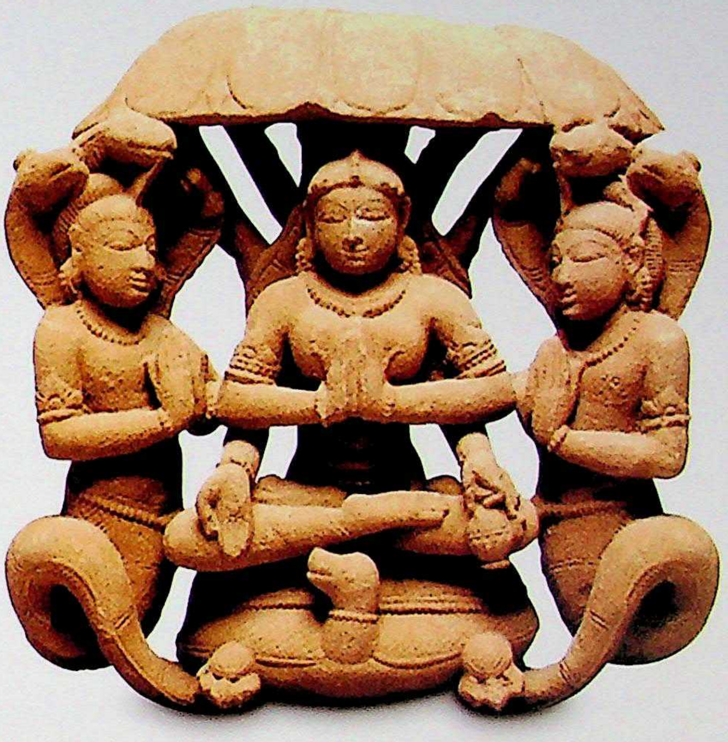
The people of the Krishna Basin also have to contend with the unpredictable nature of the river and its tributaries. In October 2009, floods replaced drought like conditions in southern India, marooning more than 350 villages and leaving millions homeless. On October 6, 2009, the Press Trust of India (PTI) reported that the Krishna River set a record in flood discharge at the Prakasam Barrage, surpassing the previous record from 1903, when there were no dams across the river.

Today, the same issues that affect the other rivers of the region plague the Krishna and its tributaries. The reality of a disappearing delta is no longer a fictional notion. Weather patterns are becoming harsher due to global warming. The scenario of extreme climatic changes, which would radically alter the face of the globe, is no longer a myth. Machalipatanam, where the Krishna meets the sea was once a flourishing port town. It is yet to recover from the aftermath of the tsunami, which struck the Andhra coast in 2004. If the question of sustainability is not addressed, India's rain-fed rivers may not be able to support future generations.

Top: *Brass masks of Lord Krishna being bathed as part of a ritualistic practice in the Krishna river at Satara.* Bottom: *Srisailam boasts of one of the largest tiger reserves in India.*

Facing page: *A carving depicting Triveni Sangam, or the confluence of three rivers. This confluence, significant in the Hindu tradition, is the meeting of two physical rivers, the Ganges and the Yamuna, and the mythic Saraswati.*

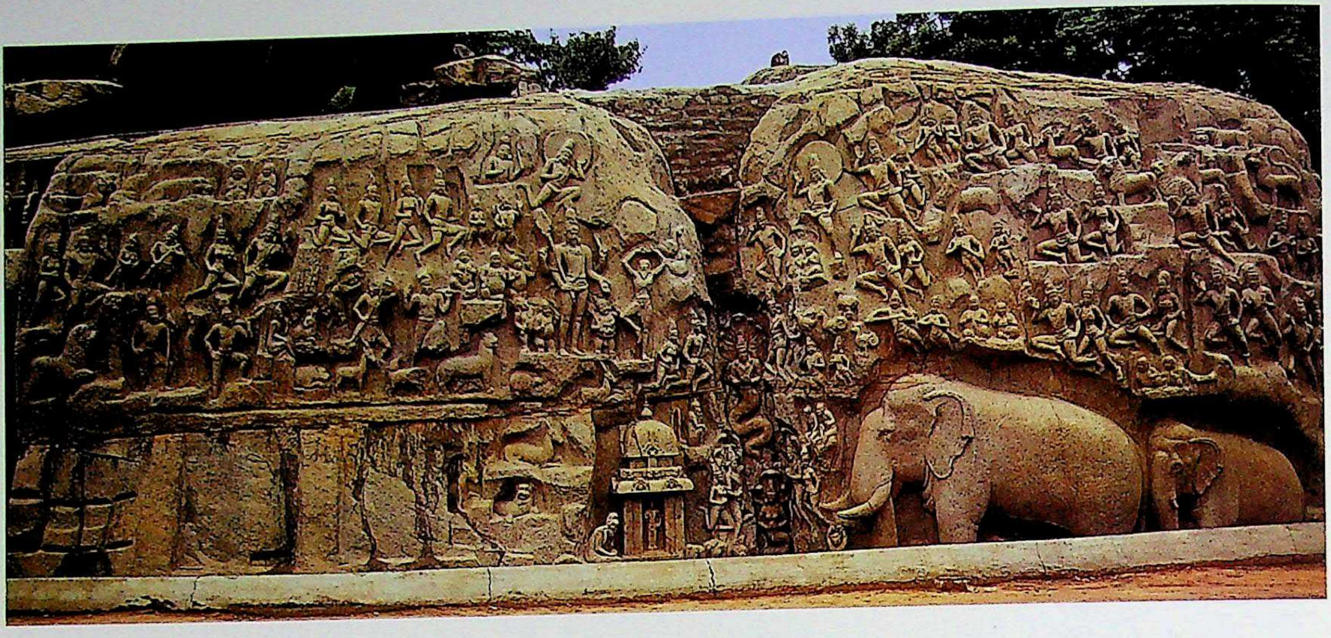
River symbolism in music, literature, art and cinema



In India, a river is often levitated to the status of a deity who spawns mythology, art, literature and spirituality. Throughout history, communities have reinvented themselves on riverbanks with various distinctive and individualistic nuances. In the Indian context, there are references to numerous river poems and songs. This tradition dates back to the Vedic Period when the earliest hymns were composed in honour of nature divinities. Between the 16th and 19th centuries, almost all the famous poets composed couplets dedicated to water bodies. While the Persian poet Ghalib spoke about his love for Varanasi, Tagore's eternal love for the Ganges was reflected in many of his poems and songs. Similarly, around the same period, Jagannatha composed a series of verses called the Ganga-Lahiri or The Waves of Ganga. In his verses, the poet addresses the river as a mother, comforter, and supporter:

I come to you as a child to his mother.
I come as an orphan to you, moist with love.
I come without refuge to you, giver of sacred rest.
I come a fallen man to you, uplifter of all.
I come undone by disease to you, the perfect physician.
I come, my heart dry with thirst, to you, ocean of sweet wine.
Do with me whatever you will.

While river symbolism had a profound influence on literature through the ages, the mysticism of rivers has also encouraged numerous forms of music. Influenced by the life-sagas of people who live along the river and the fearlessness of



Measuring 96 feet (29 m) long by 43 feet (13 m) high the descent of the Ganges at Mahabalipuram in Tamil Nadu is a giant open-air monolithic relief carving. The monuments here were built by the Pallava kings in the 7th and 8th centuries. The legend depicted in the relief is the story of the descent of the river Ganges to earth from the heavens led by Bhagiratha.

the fisher folk who dare challenge the rivers' capriciousness, river songs or 'Bhatiyali', which is a form of folk music sung by boatmen from east Bengal, echo the mystery and sacredness of these fast-flowing water bodies. In his popular composition, *Amay bhasaili rey, amay dubaili rey*, Bangladesh's famous 'Polli Kobi' (Rural Poet) Jasimuddin brilliantly portrays the anxieties of these river folk.

River songs are the soul of the river people. Nymph-like amidst shadows and echoes, they were composed out of a matrix of economic, social, and religious circumstances. Rivers have nurtured numerous civilizations through the ages, and a large part of India's history has virtually been shaped along the banks of its mighty rivers, which have been a mute witness to the rise and fall of great kingdoms. It is thus quite natural that these songs virtually reflect the joy of continuance, as well as the trepidation of wanton destruction and dissonance. Thus, allegorically, the river itself becomes a vehicle for human emotions, as it portrays human triumph and fallacy, elation and melancholy. This is what gives the river theme the adaptability as a symbolic motif in any form of art or literature.

Since ancient times, art has served as an accessory to various spiritual beliefs by personifying metaphysical notions into religious iconography and images. The best examples are the numerous female water divinities in the Hindu pantheon who have received particular attention from artists; an interest that has evolved into a certain pre-occupation with women bathing. Artists have thus played an important role in conveying in visual terms, the belief in the sacredness of water. In India, calendar art has developed into a highly technical art form, with great attention being paid to the individual traits of divinities and their expressions.

Although the rivers seldom played a central role in cinema, river mythology and symbolism was often used as an allegory. In the context of Indian cinema, the river often symbolised the yearning of lovers and the metaphysical distance between them due to the barriers created by society. It also represented turbulence, destruction and continuance.

In the movie *Ram Teri Ganga Maili*, (1985) the hero is a young man from Kolkata who falls in

RAJ KAPOOR
presents
the memorable music
the immortal songs
of a film
as pure
as the Himalayas
where
the GANGA is born
RK
RAJ KAPOOR'S
RAM teri
GANGA
maili
Music: RAVINDRA JAIN

love with a local girl on a visit to Gangotri. They get married, but the hero soon goes back to his hometown and does not return due to opposition from his family. In the interim, the girl 'Ganga' becomes the mother of his child. Ganga then travels from Gangotri to Kolkata to find him. Though she leaves her mountainous abode, innocent and pure (like the Ganges), her journey leads her into the path of exploitation, and she ultimately ends up in a brothel. Similarly, set in the first half of the 20th century Deepa Mehta's *Water* (2007) explores the plight of a group of young widows forced into poverty and prostitution at an ashram in Varanasi. It focuses on the relationship between one of the widows, who wants to escape social restrictions and a Gandhian from a higher caste.

Balika Vadhu (1976) is set in a quaint village during colonial times. A young boy named Amal marries a girl named Rajni. As was the tradition at the time, Rajni returns to her parent's house for a few more years, while Amal continues with his studies under the guidance of his elderly teacher. His life is enlivened occasionally when Rajni visits. The young bride's next visit is scheduled to coincide with Durga Pooja, but she does not arrive and instead comes during the immersion ritual of 'Bijoya Doshomi', for a couple of nights, before proceeding together on a *Tirth Yatra* (pilgrimage) with her family. They are scheduled to visit all the holy places in India along the major rivers. However, before they can proceed, their world is shattered when the police arrest the elderly teacher for being a freedom fighter. The turmoil in their lives is often expressed through the turbulence of the river.

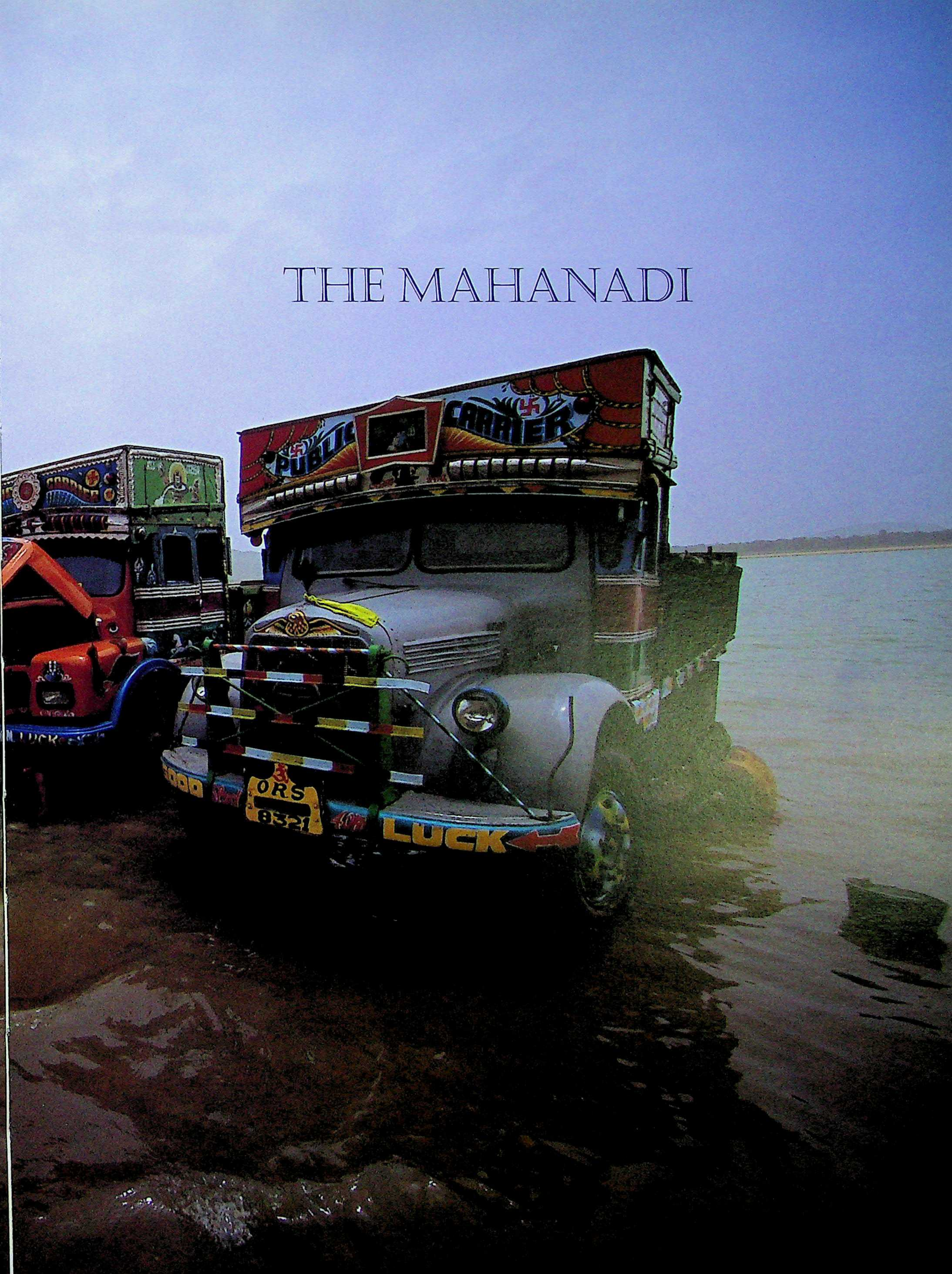
In *Paar* (1984), a poor shepherd couple are on the run from their enemies. Despite the girl's pregnancy, they have to swim across a wide, swiftly flowing river, in which they nearly drown before reaching the opposite bank. The dangerous river crossing symbolically sums up all worldly burdens and trials.

The rivers retain their sacred flavour and ancient spirit; however, we are slowly losing our association with them. Whether this will eventually sound the death of various art forms associated with the river, only time will tell. But for now, Hindus still gaze upon their river divinities with admiration. In Kolkata, you still hear Tagore's river songs on the radio. If this does not symbolise the eternalness of the river, what does?

Top: Ram Teri Ganga Maili, *directed by Raj Kapoor, was rich with river symbolism. It became an instant hit with the masses.*

Right: *A statue of the river deity, Ganga.*

THE MAHANADI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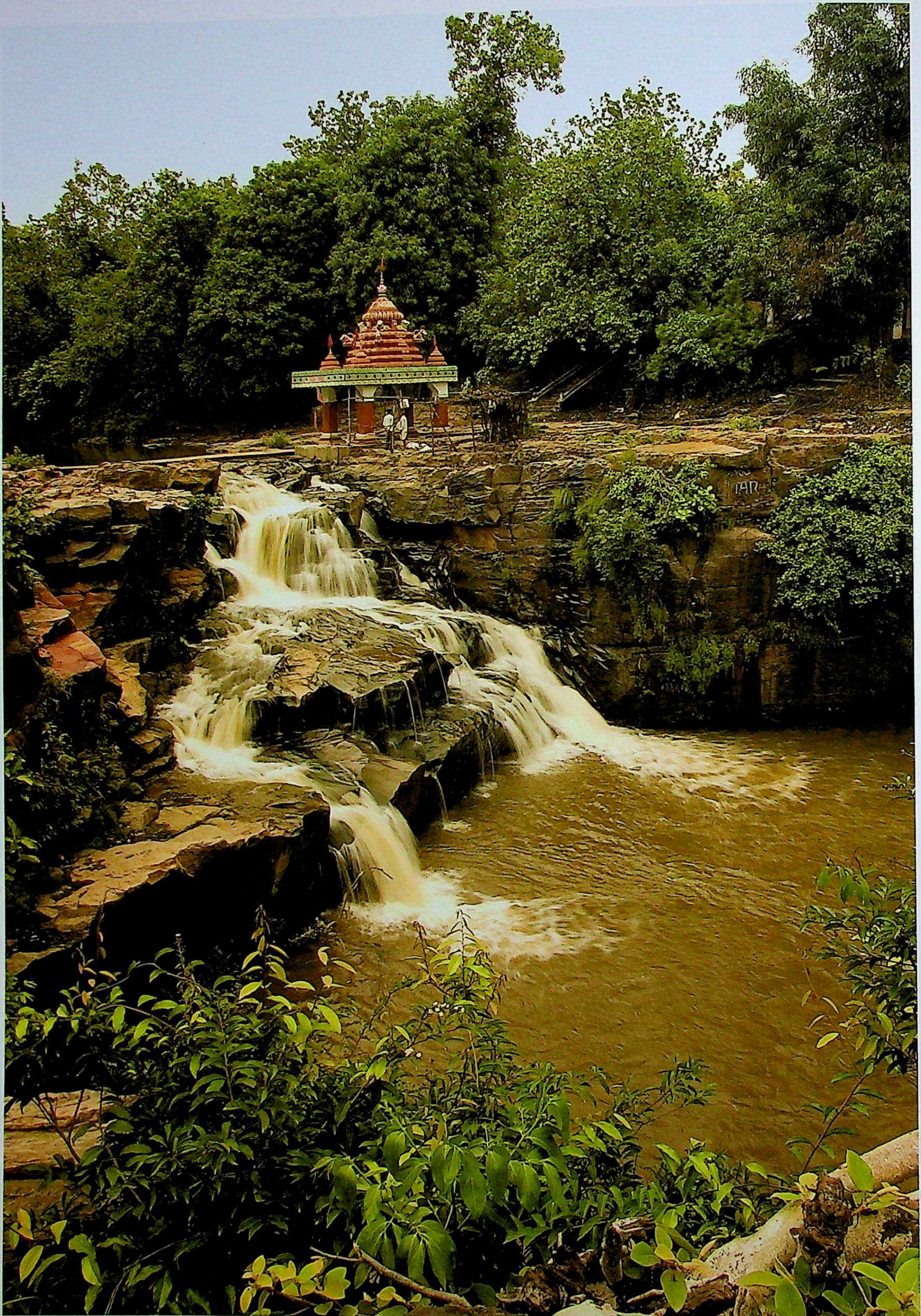
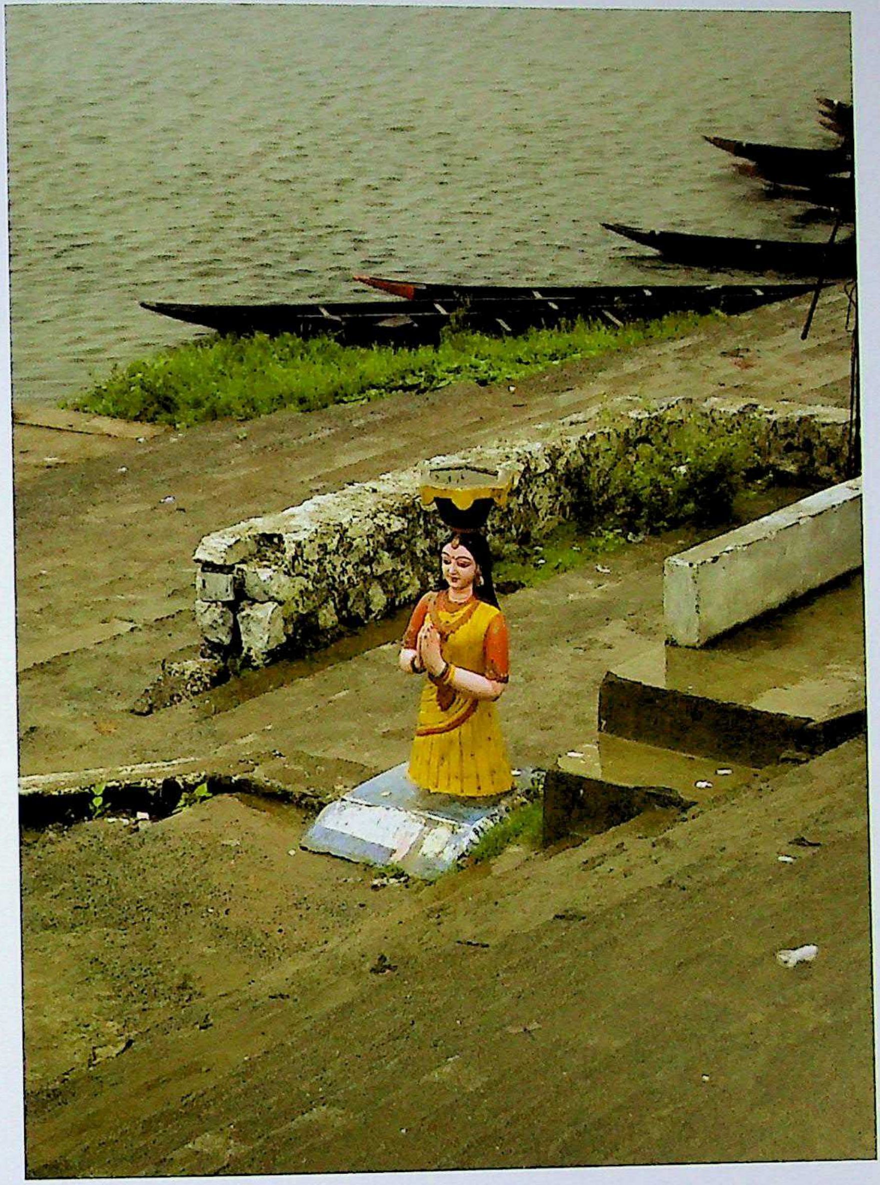




The origin of the Huma Temple in Sambalpur is linked to the legend of a sacred cow. The temple is full of large as well as miniature stone Nandis.

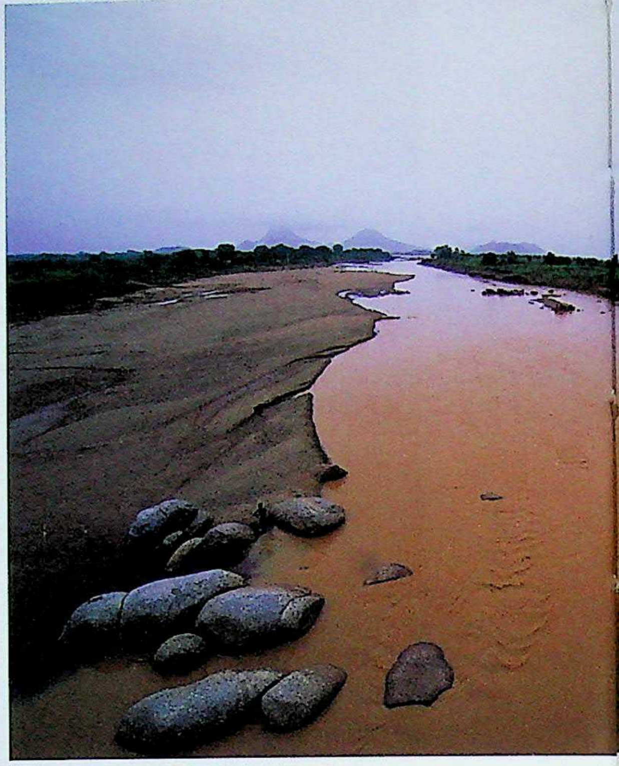
Left: *Bathing ghats and a wayside shrine along the Mahanadi in Sambalpur, Orissa.*

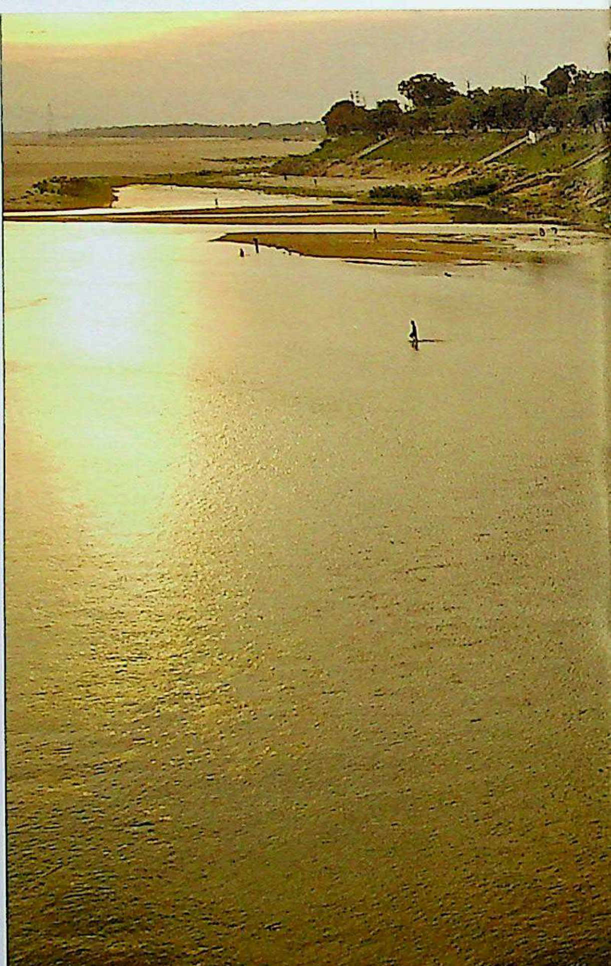
The northern watershed feeds numerous rivers, but the most significant in terms of volume and relevance are the big four that comprise the Ganges, Brahmaputra, Indus (a small part of which flows through India) and Mahanadi —one of the most important rivers of central India and Orissa. Unfortunately, this river is associated with wanton destruction. While the Mahanadi continues to be infamous for its annual floods, its gory association with the Kalinga war has tainted it eternally. So distraught was Emperor Ashoka by the carnage, that he embraced Buddhism in search of consolation.

The river, once renowned for its legendary span has been reduced to a narrow rivulet in its middle course due to large dams and sedimentation. In the dry season, navigating the shallow Mahanadi by boat is difficult and one can safely walk across its fords. The

Facing page: *The Koilighugar Waterfall is in the Lakhanpur district near the village of Kushmelbahal, Orissa. After a 200 foot drop, the rivulet flows westwards and merges with the Mahanadi River. The little Shiva Temple here attracts throngs of devotees on the occasion of Shivaratri.*

Pages 122-123: *Vehicles being washed in the Mahanadi river, off the pastoral town of Banki, Orissa.*





Clockwise from top left:
The muddy banks of the Mahanadi at Sonepur.

In Tikarpara, the mighty river Mahanadi flows through the narrow picturesque Satkosia Gorge before entering the plains.

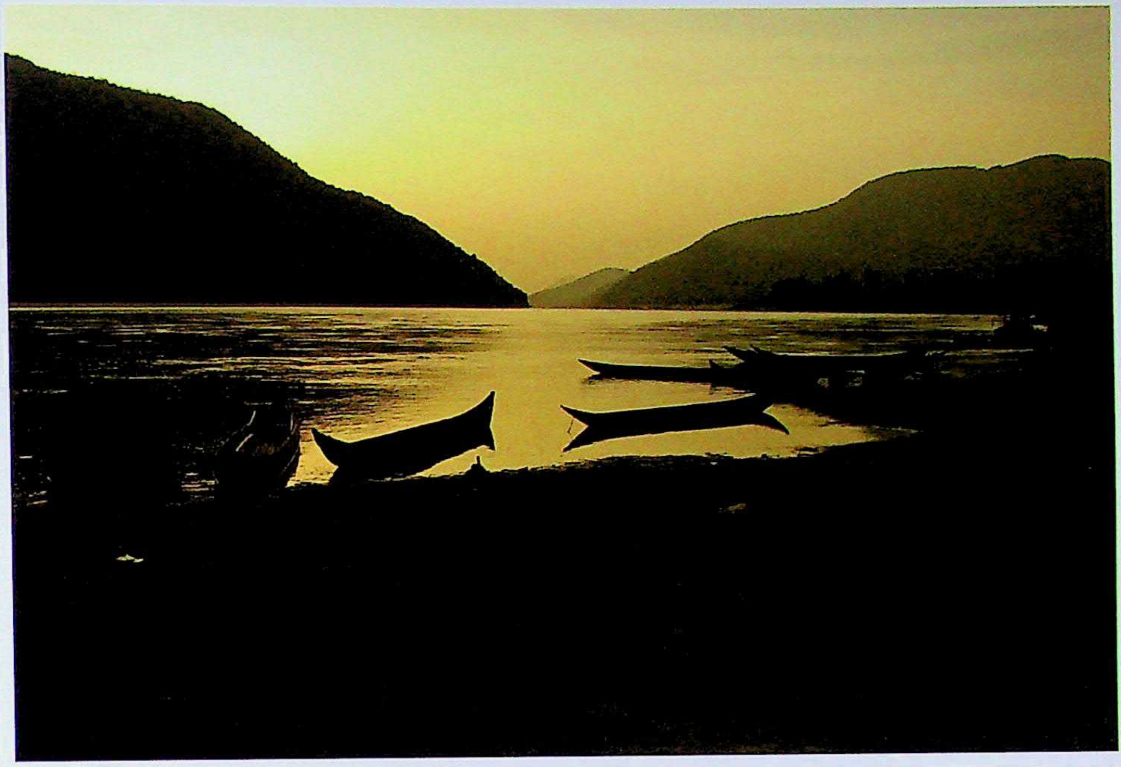
Cuttack is surrounded by the Mahanadi and its tributaries on almost all sides. On the right, one can see the ancient stone revetment that was constructed to prevent the floodwaters of the Mahanadi from entering the city.

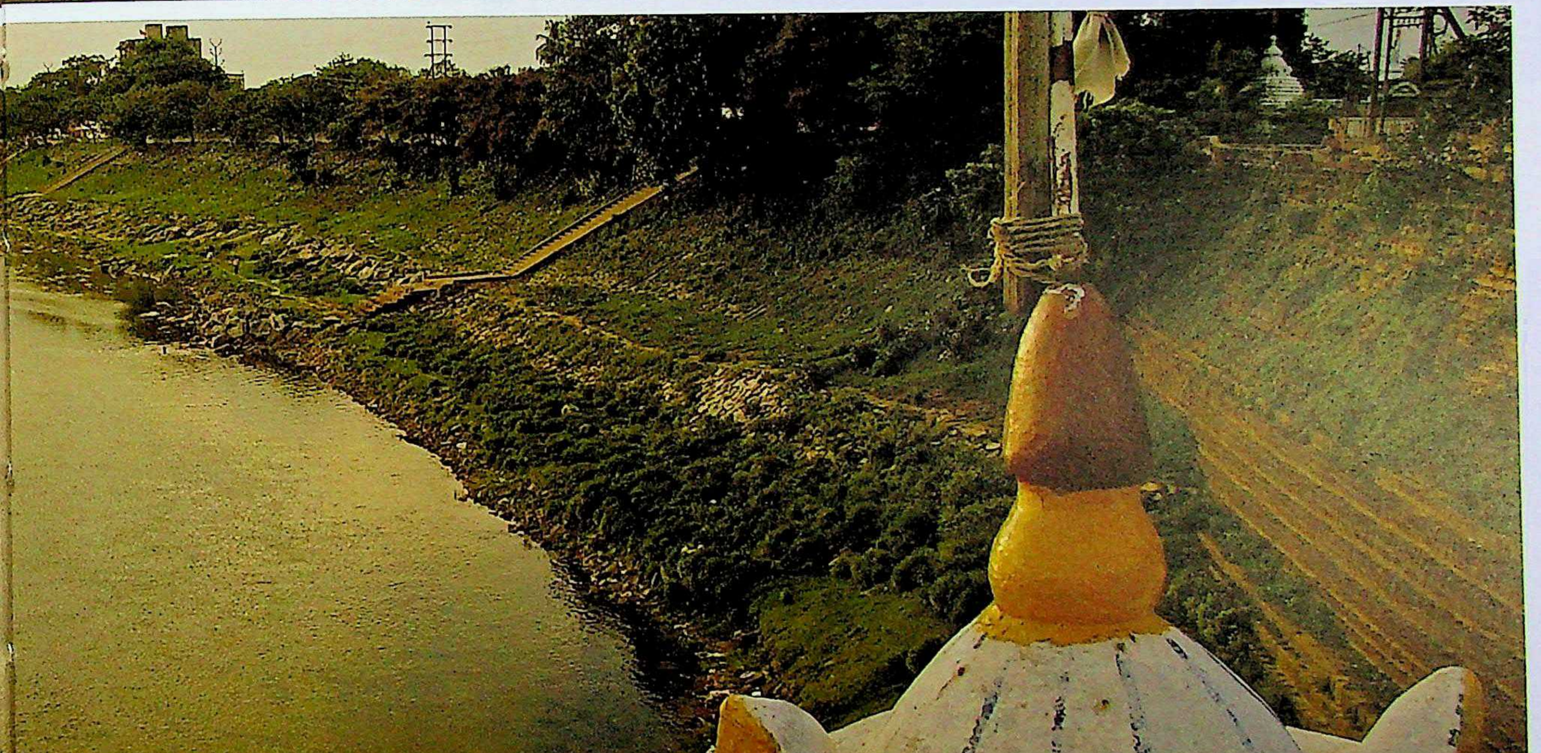
silting also makes the delta exceptionally fertile. If sufficient resources were committed to the estuarine region of the Mahanadi, Orissa would be one of the richest states in eastern India.

The Mahanadi that is otherwise timid and impotent proves its might during the monsoon. The river has an estimated drainage area of 82,000 sq km and plays a primary role in the agrarian economy of the region. The Tel (a tributary of the Mahanadi) and the Mahanadi basins in the Sambalpur and Bolangir districts, together with the Brahmani and Baitarani basins, constitute one of the most fertile regions of India. The area it irrigates is so vast that it has been adjudged the second-largest wetland in Southeast Asia. The Mahanadi that discharges only 40 cubic metres of water per second in the dry months (often leading to drought-like conditions) carries 1, 17,000 cubic metres in the rainy season. If not for the Hirakud Dam near Sambalpur and the earthen barrage at Naraj, the destruction due to flooding in the middle and lower reaches of the river would be enormous.

The literal meaning of 'Mahanadi' is 'Great River' and at almost 900 km, it is no less than its name suggests. It is the only major northern river that lacks a perennial snow-fed source. Its mythical source which is also its point of origin, is a hillock in the wild, mountainous region of Bastar in the Sihawa district of Chhattisgarh (40 km south-east of Raipur).

The origin of the Mahanadi is attributed to an interesting legend. In the distant past, all the sages of this region decided to visit the Mahakumbh for a holy dip. Maharishi Shringi, a famous sage who was also supposed to join the pilgrimage was meditating at the time and could not be roused. After waiting for a few days, the other sages decided to continue their pilgrimage without him,





A pair of oxen crosses the Mahanadi River in Sirpur.

but decided to bring him a gift of holy water. When they returned, the Maharishi was still in a deep trance. Not wanting to disturb him, the sages filled his *kamandalam* with sacred water before returning to their respective hermitages. When the Maharishi finally ended his meditation, he wanted to stretch. By a careless stroke of his hand, some water from the *kamandalam* spilled onto the ground and began to flow in an eastwardly direction. This stream eventually became a river, which came to be known as the Mahanadi.

The Mahanadi's geographical origins are also quite obscure. Atop a hillock in the Sihawa district of Chhattisgarh, a hermitage associated with Maharishi Shringi exists alongside the feeble proof of the river's mythical origin. A tiny well, the circumference of which is less than a foot, is alleged to be the source of the river and the resident hermit of the ashram happily conforms to this.

The Mahanadi disappears underground here, before emerging again as a small stream that flows through the eastern parts of Chhattisgarh. Its first big tributary, the Seonath, is above the town of Seonarayan. It continues to flow eastward, gradually increasing in volume as more tributaries join it from the hill ranges between Chhota Nagpur and Sambalpur. The river enters Orissa at

Hirakud (near Sambalpur) where it is dammed. At Padampur, it turns south and struggles past huge boulders on its way towards Sonepur. From here, it cuts through the hills, before descending into the lovely Satkosia Gorge at Tikarpara. This 22 km gorge flanked by forested slopes is famous for its cascading mountain streams and rapids, and is popular with wildlife enthusiasts. The river runs through a thick deciduous forest that supports a variety of flora and fauna; a crocodile breeding centre has been established here to reintroduce the Gharial into the Mahanadi's riverine ecosystem.

From Tikarpara, the river flows towards the city of Cuttack that is flanked by the Mahanadi and its tributary, the Kathajodi. Cuttack was established in 989 AD and hence is also called the 'millennium city'. It was the capital of Orissa for almost ten centuries. In 1948, when the capital was shifted to Bhubaneswar, its importance remained undiluted and it retained its position as the administrative headquarters of Orissa. A walk along the banks of the Mahanadi unfolds Cuttack's rich historical tapestry. The Barabati Fort built by the Ganga kings in the 14th century is now in ruins; but the brilliance of the highly decorative Orissan style of architecture is still evident. If you travel downstream, you can

Fishermen along Orissa's coast. With depleting fish stocks, fishing may not be economically viable in the future.

The Naraj Barrage 10 km downstream from Cuttack, protects the city from the wrath of the Mahanadi in the monsoon months.

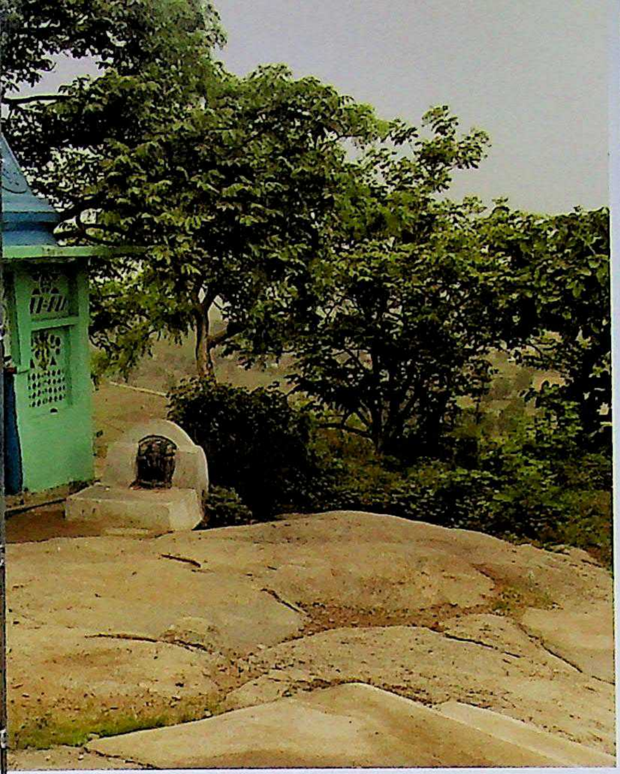
Centre & far right: *The tiny spring-fed well on the premises of the Shringi Ashram in the Sihawa district of Chhattisgarh is the mythical source of the Mahanadi.*

Facing page below: *Huma Temple, situated on the banks of the Mahanadi near Sambalpur, was established in the year 1670. It is believed that the temple was built by Baliar Singh, the fifth king of the Chauhan dynasty of Sambalpur. It is popularly known as the leaning temple of Huma, as the pinnacle is tilted 47 degrees to the west; however, the base of the temple remains parallel to the ground.*

see the stone revetment that was constructed in the 11th century to protect the city from floods and the stone barrage at Naraj; both continue to serve their purpose.

The Mahanadi continues its journey through Orissa, before it disembogues into the Bay of Bengal at a place called 'False Point', which has a rather peculiar relationship with ill-fortune. The position of False Point was considered ideal for trade, and efforts had been made to develop it into a sea port where ocean-bound steamers could dock. A harbour was built here about two hundred years ago. In 1815, a violent storm not only destroyed the port, but also claimed several lives. The project was abandoned and today, Paradip near False Point serves as Orissa's primary seaport.

Although the legend of its origin is Puranic in nature, the Mahanadi's diminutive religious connection has meant that very few festivals are associated with the river itself. While a sacred dip on the auspicious occasion of Mahashivratri is observed throughout the region, the only other noteworthy river festival is the Baliyatra, which literally means 'journey to Bali'. It marks the day when Sadhabas (Oriya mariners) set sail to Bali, Java, Sumatra, Borneo and Sri Lanka for purposes of trade and cultural expansion. The festival is celebrated during Kartik Purnima (October-November) for a period of five days just before the full moon. These traders sailed in large vessels called *boitas;* therefore, the festival is also known as Boita Bandana Utsav (festival of boats). To recapitulate this ancient tradition, most port towns in this belt observe an elaborate ceremony in which boats are worshipped.



Seafarers and boatmen have always believed in omens and water deities to help them through their journeys. But there were also ancient navigational aids that often came to their rescue. Just south-west of Sambalpur, on the bank of the Mahanadi, is one such place that played an important role in ancient river navigation. Called a 'lighthouse without light' the Ghanteshwari Temple is famous for the thousands of bells that are hung in long rows on every available branch and fence. Whenever the wind blew, the bells warned boatmen of the treacherous spot near the temple, where three streams of the Mahanadi met, creating a giant whirlpool. Following the construction of the Hirakud Dam, this stretch does not pose any further danger.

In striking contrast to the other northern rivers, the Mahanadi has been rather shy of religious association, but specimens of religious architecture can still be found in the temple towns of Rajim, Sirpur (Chhattisgarh) and Sambalpur. Of these, Huma near Sambalpur is famous for its leaning shrines. Nobody knows the true reason behind this, but there is an interesting myth about the temple's origins. The worship of Shiva (the main deity) is said to have been initiated by a cowherd. One of his cows would go into the jungle everyday and return without milk. The bewildered cowherd followed the cow one day and was amazed to find the animal standing over a black rock, spraying it with milk. It did not take this cowherd long to realise that the rock was in fact a Shivalinga and he began to worship it every day. It is alleged that the original temple was built around this Shivalinga. The tame

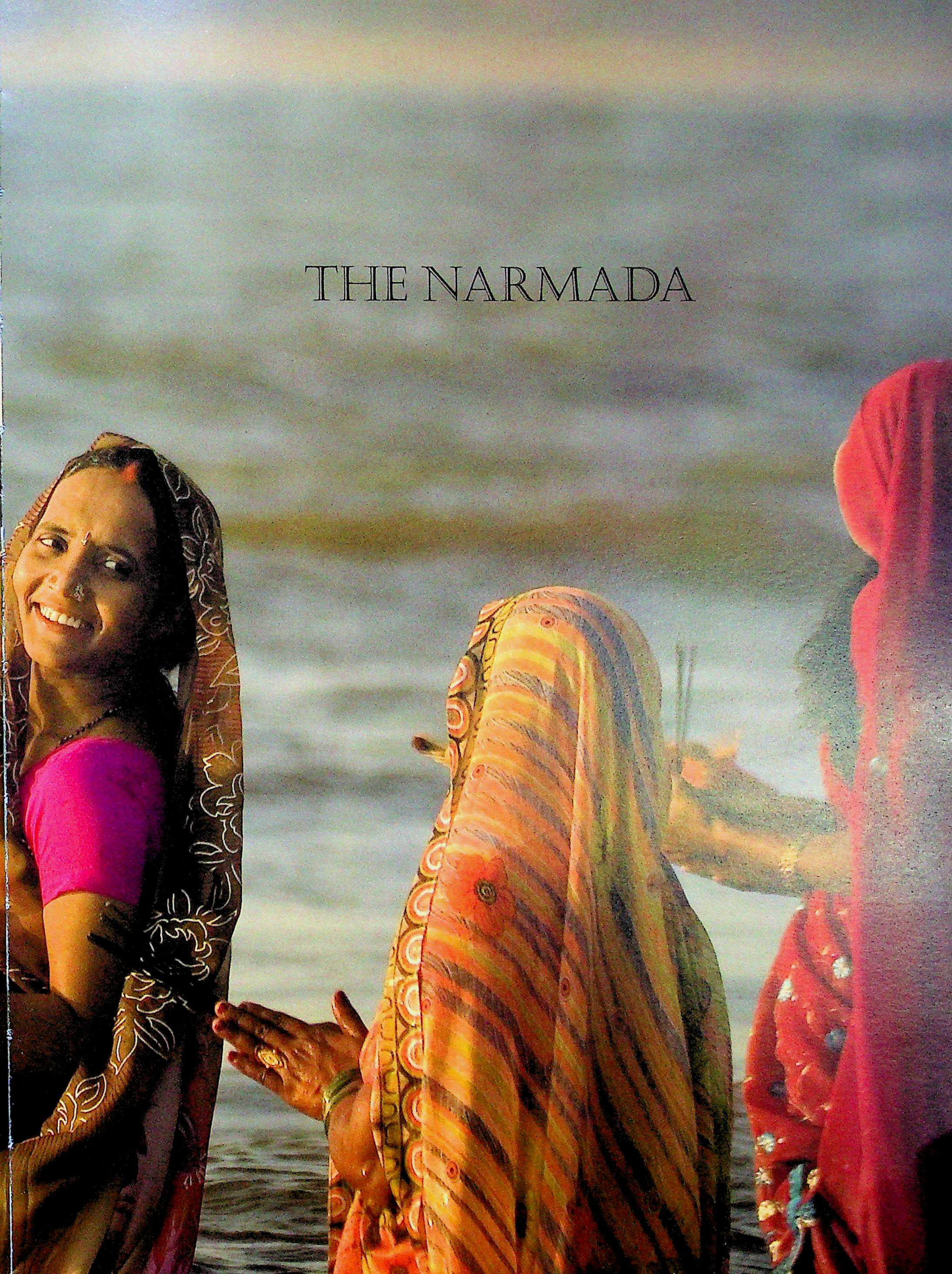
While one part of Paradip is highly industrialized, the other comprises of pristine beaches.

Facing page: *The famous Ghanteshwari Temple of Orissa with its thousands of bells that served as a navigatorial aid in the past.*

Kodo fish that live in shallow pools along the river eat out of the pilgrims' hands and many locals make their living selling fish feed. These fish are never caught or eaten as they are believed to be sacred.

After Sambalpur and Cuttack, the river flows through picturesque agricultural villages before entering Paradip, where the entire scenery changes. Chimneys of petrochemical units and dock cranes rise from the landscape like alien figures. The fresh air of rural India is replaced by a thick blanket of chemical smog that hangs low. Although a part of Paradip is highly developed, the other side comprises of virgin beaches. Charming fishing villages with their traditional way of life compete with the burgeoning needs of an industrialized township. Urbanization is gradually intruding into their lifestyle and effluents are slowly poisoning the sea on which these fisher folk depend. Brave men in their tiny fishing boats are often seen battling the elements. With only a prayer on their lips to guide them home and the fond hope of a good catch, they have preserved their tradition for centuries. However, this might soon be a thing of the past, for if the levels of pollution increase, this community might become extinct. If the carcasses of giant sea turtles and the drastic fall in catches are any indication, the first signs of impending doom are already quite visible.

THE NARMADA



Pages 134-135: *Chhat Pooja celebrations off the coast of Bharuch, Gujarat.*

If rivers could be rated according to grace, the Narmada would be the strongest contender. The river runs a rather picturesque course from its point of origin, to where it meets the sea. The watershed of the Amarkantak Plateau where the Narmada begins its journey also feeds the Sone River. While the former flows westwards towards the Arabian Sea, the latter flows in a northwesterly direction and joins the Ganges.

The Narmada originates at the meeting point of the Vindhya and Saputara Ranges on the crest of the Maikal Hills. Its mythical source is not far from its geographical origin. The spring-fed temple tank of Narmada Kund, which is surrounded by temples dedicated to the river goddess, is believed to be the source of the Narmada. Like many other temples, the water is channelled

On the banks of the Narmada River at Maheshwar, Madhya Pradesh. In the late 18th century, Maheshwar served as the capital of the Holkar dynasty. The city flourished under the leadership of Rajmata Ahilyadevi Holkar, who embellished the city with many buildings and public works.

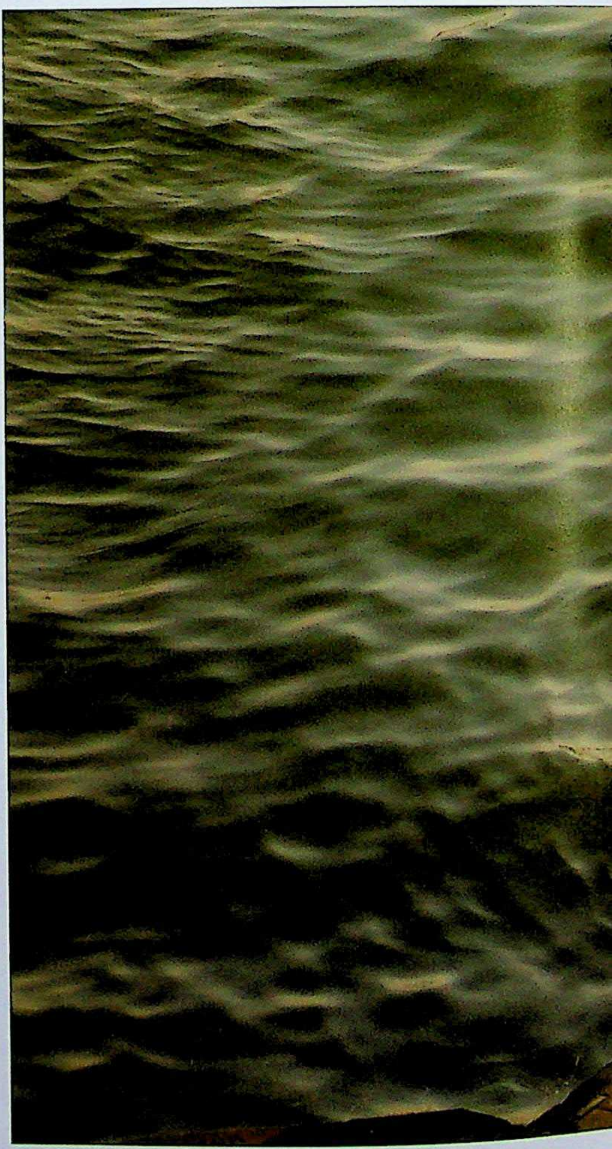
through a stone snout into a tank that serves as both cattle trough and public bath.

The Narmada is the fifth-longest river in India and runs a course of approximately 1300 km. It is also the largest west-flowing river and forms the traditional boundary between the northern and southern parts of India. Considered among the holiest of Indian rivers, it is believed that a mere glimpse of its waters can deliver salvation and this is a constant influence in the lives of people who live along its banks. This has ensured that some of the most prominent centres of pilgrimage in central India are sited along its course. While the geographical origin of the river is attributed to a fault line in the earth's crust, there are many legends pertaining to its mythological origin.

Clockwise from top left:
A sculpture of Nandi at Maheshwar.

A family of goats perched atop the jagged marble rocks of Jabalpur.

A solitary pilgrim bathes at the ghats of Maheshwar.



Once there were severe drought and famine-like conditions on earth. The gods petitioned Shiva to relieve humanity from this terrible situation. Shiva meditated for several days in order to sort out the problem and so intense was his meditation that he began to perspire profusely. Droplets of his perspiration fell to the ground and from it developed a beautiful maiden with whom all the gods became besotted. They pursued her hopelessly, but the divine lady kept eluding them. Shiva was extremely amused by the situation and named her 'Nar Mada' (one who gladdens the hearts of men) and requested her to flow for the salvation of mankind. In the Narmadeshwar Temple at Amarkantak, the goddess is seated on her crocodile mount (a common attribute of river deities). In her four arms, she holds objects that reinforce her essence, one of them being a Shivaling that signifies her devotion towards her father and creator.

Yet another legend narrates that a couple of teardrops that fell from the eyes of Brahma (creator of the universe) yielded two rivers—the Narmada and the Sone.

Celestial romances and weddings have always been an integral part of Hindu lore. It is not surprising then, that this theme features in a legend associated with both the Narmada and Sone, who were deeply in love with each other. However, just before their nuptials, the groom-to-be succumbed to the flirtations of another rivulet and the livid Narmada stormed-off to the west vowing to remain a virgin.

According to some versions of the Puranas, Narmada was the incarnate of Tapti (the daughter of Surya and Chaya). She is also said to be the sister of Shani (Saturn) and Savitri (Parvati), which makes her particularly auspicious. It is believed that the Ganges

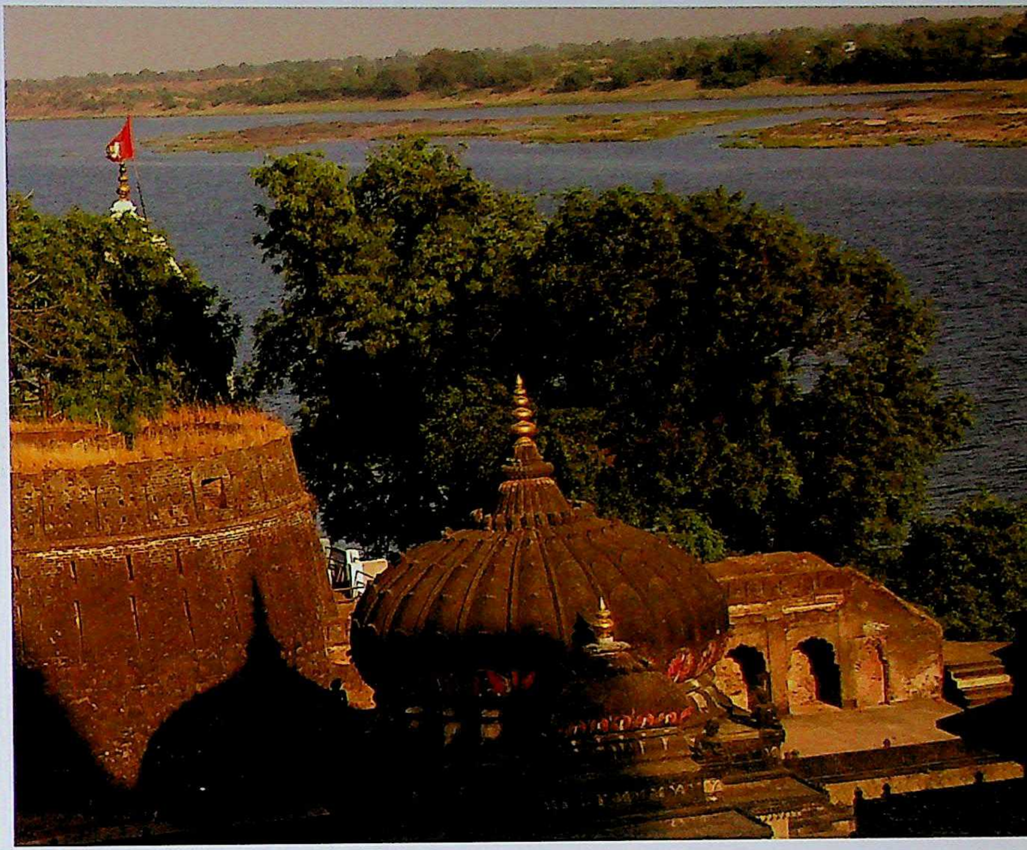
Adivasis *protesting in Kharya Bhadal. When the Narmada is in spate most hutments and farm lands in villages like Kharya Bhadal (in Barwani) face the threat of submergence. Villagers allege that this never happened prior to the construction of the dam.*

Centre: *The principal shrine of Goddess Narmada (Narmadeshwar Temple) in Amarkantak.*

visits her once a year in the guise of a black cow to cleanse herself of accumulated sins. Pilgrims often undertake the Narmada Parikrama (circumambulation of the river), an arduous journey of 2600 km from Bharuch to Amarkantak and then back again.

History and legends apart, the Amarkantak Plateau where the river rises, is one of the most scenic hill stations in central India. The river meanders through a thick blanket of deciduous forests until it reaches the edge of the plateau. From here, it splits into two channels, and cascades down a 150-foot drop as the Kapildhara Falls. The two streams meet a short distance away and flow towards Dindori, (90 km from Amarkantak) where the river becomes wider as it is joined by several other rivulets.

This region is rich in fossilized molluscs that date between 40 and 200 million years and offers enormous possibilities in the study of the formation of landmasses between the Tertiary and Jurassic periods. In 2002, the fossil of a large carnivorous predator christened the Rajasaurus Narmadenis was excavated in the same belt. This reptile, which measured 30 feet in length and over 10 feet in height, lived around 67 million years ago. Palaeontologists have unearthed hundreds of fossilized dinosaur eggs between Dahod and Jabalpur. Interestingly, one of the largest and earliest



The battlements of Maheshwar Fort and the principal shrine encompassed by it.

tyrannosaur fossils ever found, which is now on display in the British Museum of Natural History, was also excavated in the same area.

Unlike most rivers in central and southern India, the Narmada descends in a series of great cascades until it reaches the plains. Near the town of Mandla, at the Shahasradhara falls (thousand cascades) the river is broken up into several swiftly moving streams by huge basaltic formations. Locals believe that these rocks are remnants of an ancient dam; however, there is little archaeological evidence to support this theory.

The tiny island of Maheshwar is one of the better-known religious sites in the middle course of the river. According to local lore, it is situated at the centre of the universe, on the axis which connects the centre of the earth to the polestar. The island has an intimate connection with the Holkar Dynasty; in the 18th century, it served as their capital. During this period, the town was embellished with numerous public works, which includes Rani Ahilyabai Holkar's fort that towers over the riverfront and provides a magnificent panorama of the Narmada. Maheshwar is also famous for its handloom industry, especially for the unique Maheshwari sari that takes its name from the town.

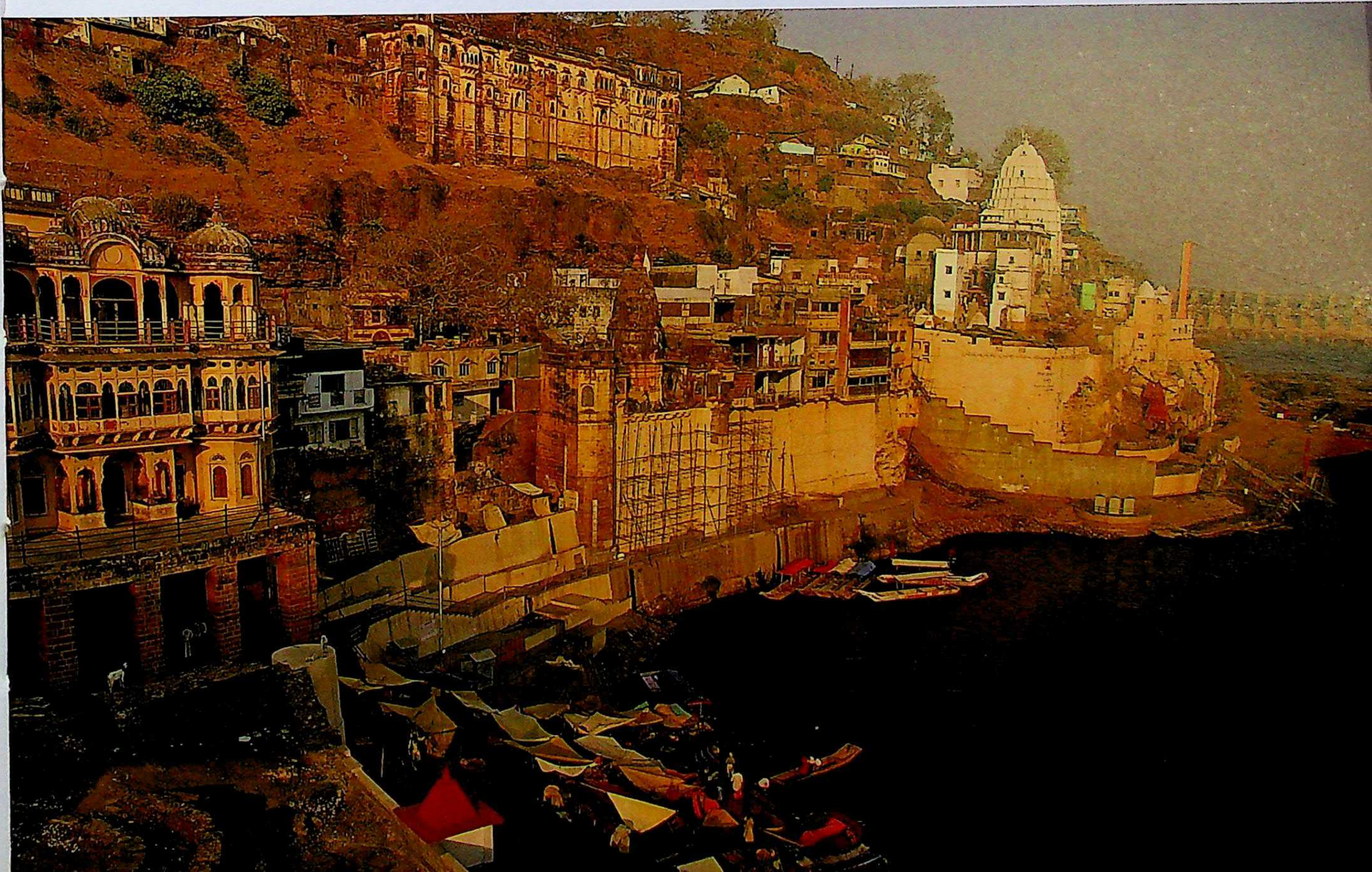
A devotee performs a ritualistic surya-namaskar *at dawn at Maheshwar.*

Downstream at Omkareshwar, the river splits into two channels before re-joining in an 'Om' shaped oxbow formation. The island formed thus, is one of the most important centres of Shaivite worship in central India. Amid the numerous relics of the Brahmanic era, which include shrines in various stages of dilapidation, the Shri Omkar Mandhata temple stands out like a jewel. One of the twelve Jyotirlinga shrines of Shiva, it makes the island particularly propitious. Steps from the temple lead to the bathing ghats where eager boatmen in gaily-coloured boats wait for passengers.

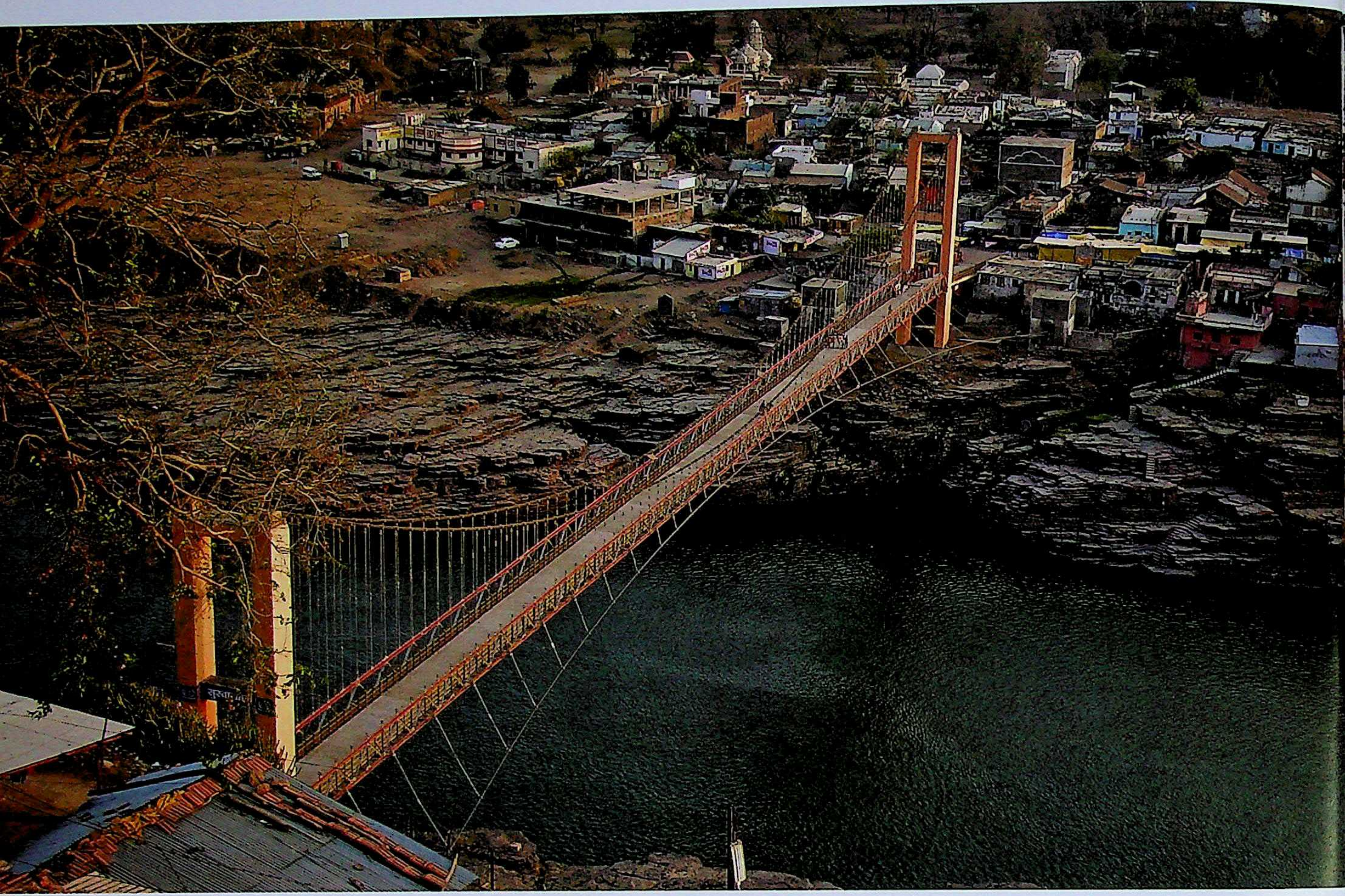
Omkareshwar is also the point where the pro and anti-dam dispute begins. Until recently, the people of Omkareshwar had to rely on oil lamps and lanterns. Following the construction of a dam just upstream, they have benefited greatly. Not only has the dam provided employment to the locals, now they also enjoy uninterrupted power supply. However, while the villages downstream have profited from the dam, many villages in the reservoir areas are now submerged. This very saga of displaced villagers and farmers gave birth to the Narmada Bachao Andolan.

The width of the river gradually reduces as it flows past the agricultural town of Khalghat. The picturesque town of Barwani in the Nimar district is the last important settlement along the river in Madhya Pradesh. Surrounded by the Satpura Hills, it rises from the lush Narmada Valley and is often referred to as the 'Paris of Nimar'.

Barwani is also the focal point of the Narmada Bachao Andolan (NBA), a movement that was spearheaded by the environmental activist Medha Patkar. The construction of large dams on the Narmada and its impact on the millions of people living in the river valley has become one of the most controversial social issues in contemporary India. The NBA's opposition to the construction of large dams on the river symbolizes the struggle for an impartial society. Harping on the development card, the government plans to build 30 large, 135 medium and 3000 small dams to harness and channelize the water of the Narmada and its tributaries. However, opponents of the dam question the human cost and ecological sustainability of such large projects. They also believe that water and energy can be provided to the people of the Narmada Valley and Gujarat through alternative environmentally sustainable technologies. While both proponents and opponents



A bird's eye view of the ghats at Omkareshwar. The superstructure of the whitewashed Shri Omkar Mandhata temple is visible in the distance.



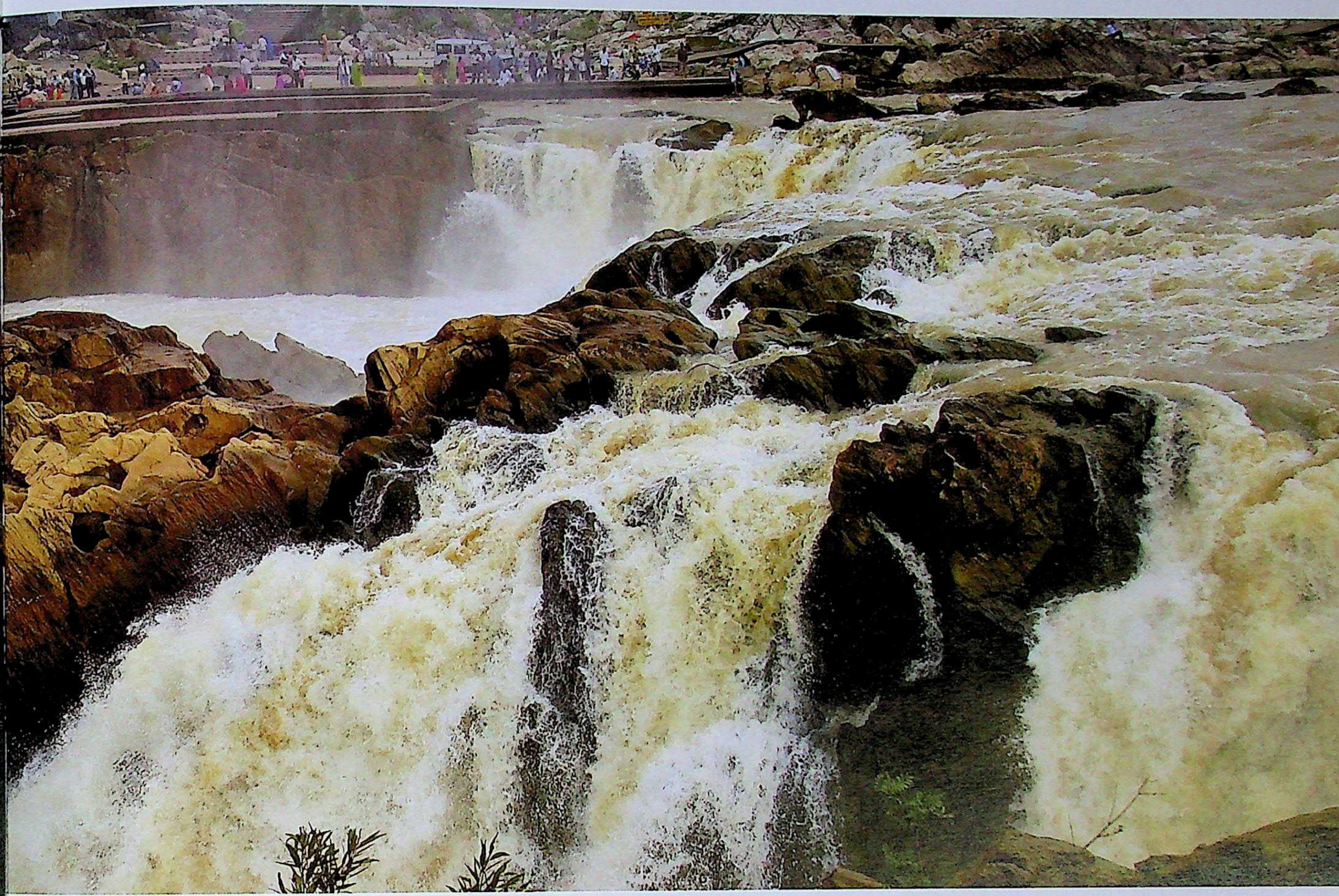
Suspension bridge over the Narmada at Omkareshwar.

of the dam refuse to back down, the people of the Narmada Valley will have to wait and watch which way the tide turns.

From Barwani, the river flows on through a small part of Maharashtra before entering the state of Gujarat. The narrow river then gets a new lease of life at Chandod where two more tributaries join it. In the monsoon, Hilsas spawn upstream making this area one of the richest riverine fishing grounds in western India.

The Narmada continues its journey towards Ankleshwar and the city of Bharuch. These twin cities lie on opposite banks of the Narmada, connected by a bridge built in the colonial era. However, the British connection runs deeper; few are aware of Ankleshwar's association with the British war against the Spanish. Once famous for its teak forests, it was stripped bare to build the British warships that fought the Spanish Armada (1588 – 89 AD).

The river finally meets the Arabian Sea near Bharuch, which is the oldest settlement in the Narmada Valley. It was an important

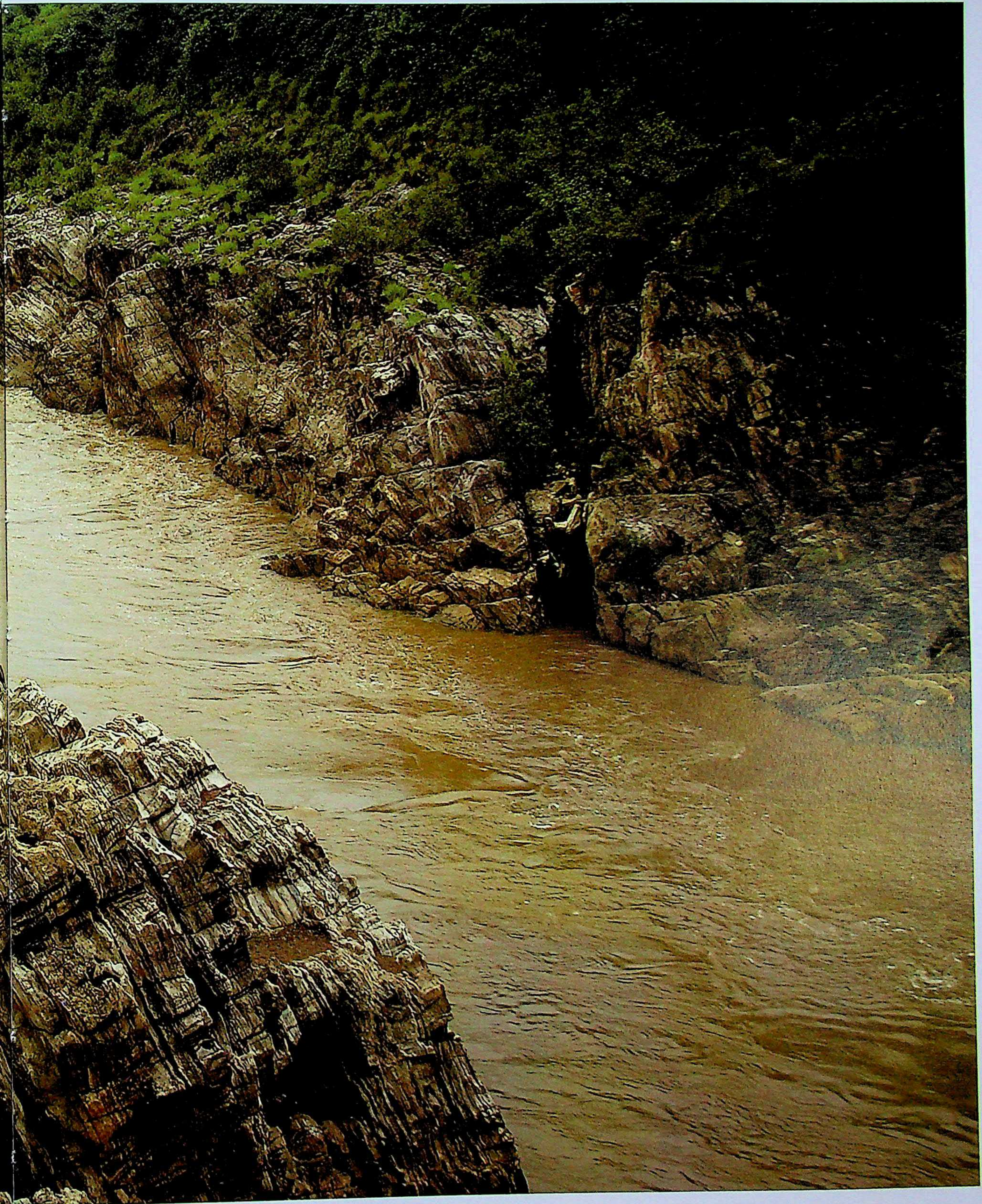


trading centre in the 1940s and at one time, the Parsi community was the mainstay of this town. Parsi surnames are often associated with their place of birth or occupation and many still have the telltale surname of Barucha. Their homes, fire temples and the tower of silence still survive. UNESCO's Parzor Project is trying to preserve these buildings along with their unique water-harvesting system based on underground tanks called 'tankas'.

The beachfront in Bharuch also plays host to one of the most widely celebrated festivals in India, the Chaat Pooja. Primarily a north Indian festival, it is celebrated with great pomp. Today Bharuch's importance as a port has been diluted due to excessive silting, but the city is highly industrialized. Excavations along the Narmada suggest that the people of this town once traded with the Greeks and Romans. Even today, this city by the sea where the Narmada ends its journey is rather prosperous, thanks to the benevolent river that nurtured it.

Dhuadhar Falls, Beda Ghat. The water here falls with such great force that there is a permanent column of mist around it.

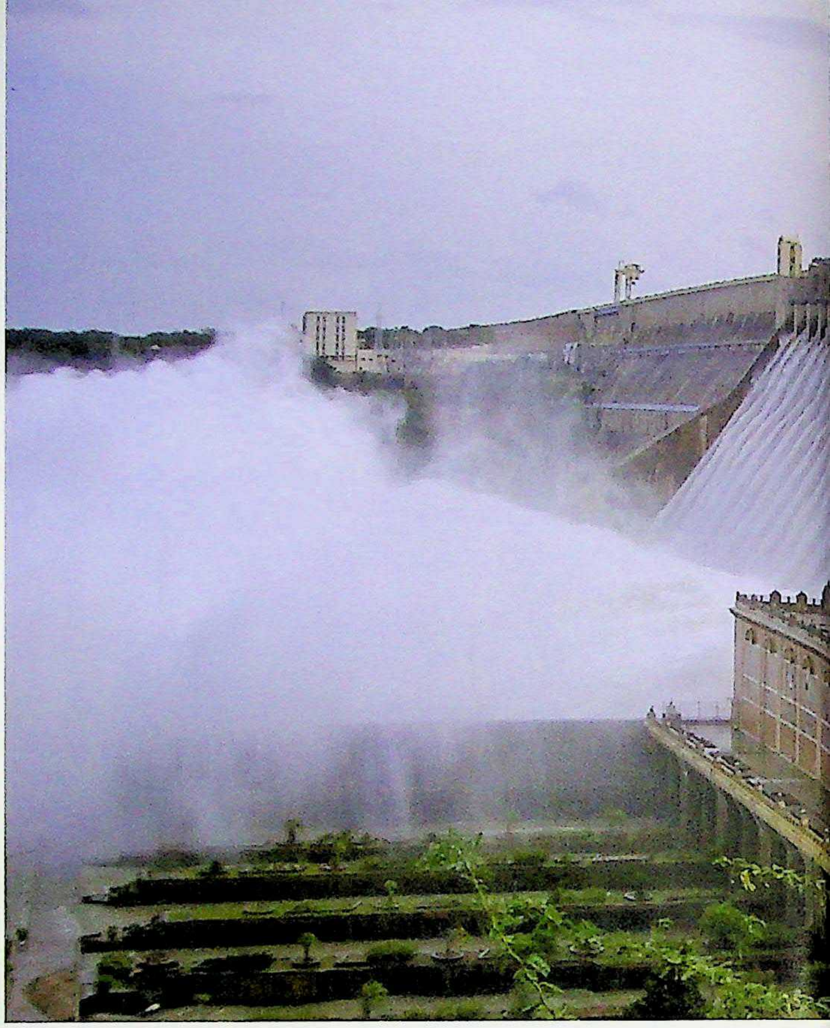
Pages 146-147: *A panoramic view of the marble rocks at Bedaghat near Jabalpur.*



Taming The Waters

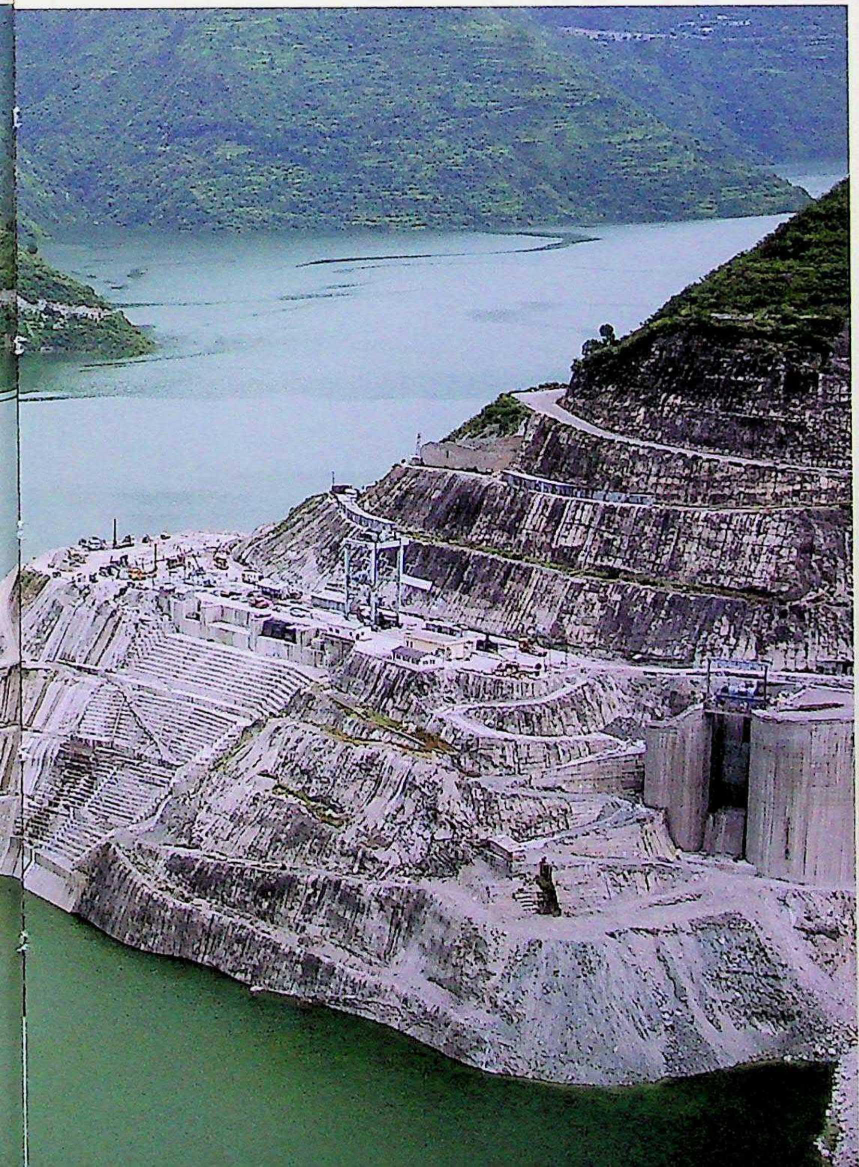
Throughout the world, and in every age, the distribution of water established the foundation for society, state, and empire. Of late, the politics of large dams and the distribution of the benefits and costs of irrigation through such projects have become prominent on the agenda of social scientists and activists. Proponents of large dams point out that irrigating agricultural land through large projects has many advantages; in case the monsoon fails, food security is not compromised, and these projects are also the source of clean energy.

As irrigation leads to an intensification of agricultural production, the associated 'multiplier effects' are often the generation of employment and better socio-economic conditions. For instance, the state of Punjab (land of the five rivers) is one of the most fertile regions on earth. According to the India State Hunger Index 2008, Punjab has the lowest level of food shortage in India. The signs of affluence (in Punjab) are clearly visible—luxury cars, glitzy malls, express flyovers, upmarket motels, and some of the largest farm holdings in the north. While everything seems favourable on the outside, pockets of camouflaged poverty do exist. Although Punjab's relative prosperity has much to do with the head start it gained with its trumpeted green revolution, it is confronted with a high level of disguised unemployment in the agricultural sector. While the Bhakra Nangal Dam has benefited rich farmers with large landholdings, the smaller farmers have largely been ignored. This is what opponents of the mega dams are worried about. They are firm in



The Nagarjuna Sagar Dam is the world's largest masonry dam. It is built across the Krishna River in the Nalgonda district of Andhra Pradesh.

Below: *The Tehri Dam is a rock and earth-filled embankment dam on the Bhagirathi River near Tehri in Uttarakhand.*



their conviction that, other than the ecological destruction caused by large dams, the economic costs are often borne by the weaker sections of society, while the benefits accrue to the better off. The issue of resettlement is another major concern. The people, who have to migrate from the area where the reservoir is to be constructed, demand only suitable resettlement and adequate compensation for their losses; but this seldom happens. This has sparked many civil rights movements throughout India, one of the most famous among these is the Narmada Bachao Andolan led by Medha Patkar.

The argument over the pros and cons of damming rivers started in the 19th and 20th century, much prior to the current intensification of the geo-political wars over water and its distribution. Due to the consistent efforts of the colonial and post-colonial state to commoditize water (by controlling its distribution) a political economy emerged, which sought to use the 'control of water' to consolidate and widen its base.

Although it was established that the ecological cost of constructing dams would have serious repercussions in the future, this concern was always ignored. The scale of deforestation that occurs when a large-scale dam is built is enormous. During the construction of the Tehri Dam in Uttaranchal, thousands of acres of forest and agricultural land was excavated to create the reservoir. It also displaced around 100,000 people, many of them farmers. Similarly, in Kalinadi (Karnataka), the genetic checks that were in place have been altered. A highly destructive and toxic weed *Eupatorium glandulsum*

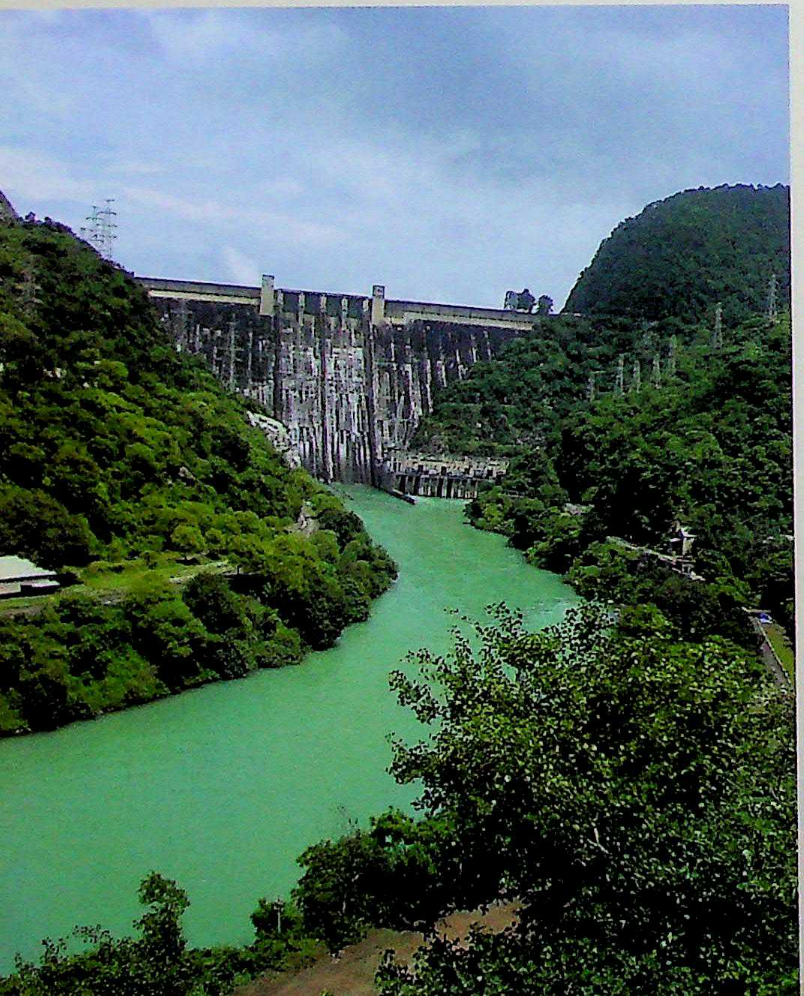
Below left to right:
The Bhakra Nangal Dam is a concrete gravity dam across the Sutlej River, near the Punjab-Himachal Pradesh border in northern India. The dam, located in the village of Bhakra in the Bilaspur region of Himachal Pradesh, is Asia's second-highest dam.

The Srisailam Dam constructed across the Krishna River at Srisailam in the Kurnool district of Andhra Pradesh, is the 2nd largest hydroelectric project in the country.

The Hirakud Dam is built across the Mahanadi River, about 15 km from Sambalpur in the state of Orissa. Built in 1957, the dam is one of the world's longest earthen dams.

that once grew passively has suddenly multiplied on such a scale that it has almost destroyed the forest cover. The dead trees cannot hold the soil together and landslides and soil erosion are major causes of concern. In Andhra Pradesh, studies have established the correlation between the Nagarjuna Sagar Dam and a crippling disease that has affected people in its vicinity. Seepage from the dam has increased the water level in the sub-soil; consequently, the alkalinity level of the soil has been altered due to dissolved trace elements like fluoride and calcium. Many villagers in the area have been diagnosed with fluorosis and the knock-knee syndrome that is often crippling.

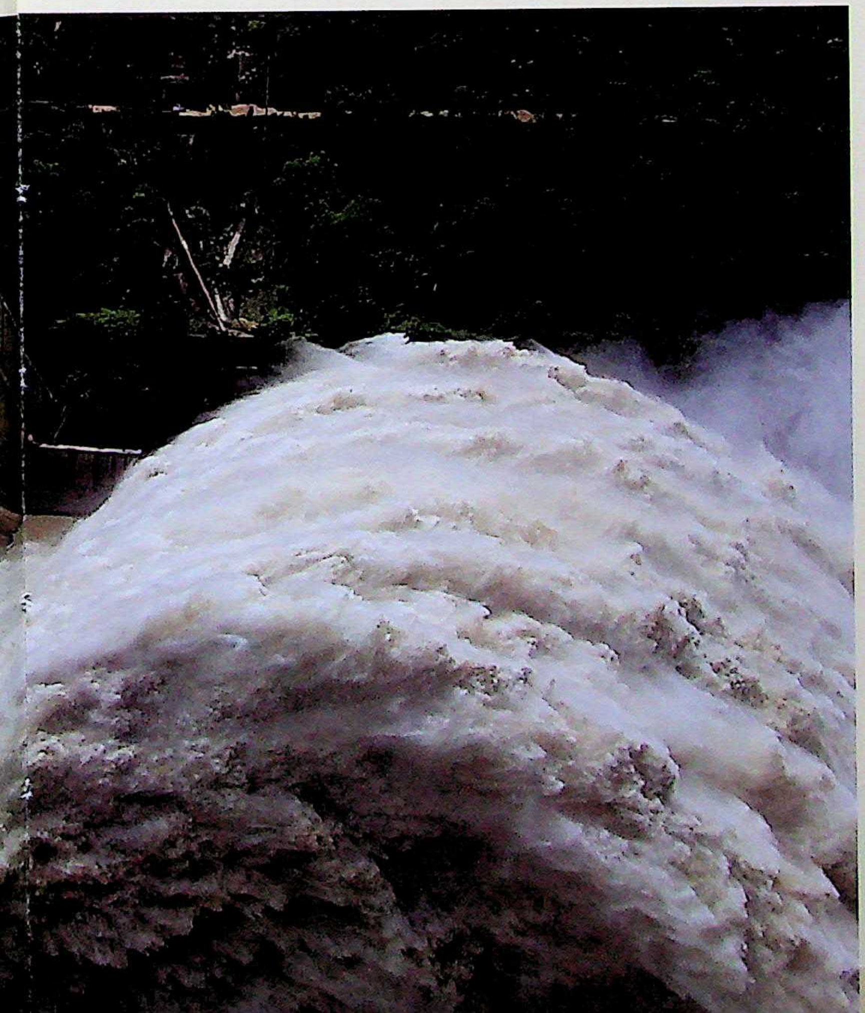
However, despite the problems associated with them, dams are responsible for irrigating large tracts of land. In 1947, there were fewer than 300 large dams in India; now there are over 4000. More than half of them were constructed between 1971 and 1989. While some of these



were built for flood control, the supply of potable water and power generation, their primary role remains irrigation. But this ratio will change in the future. India is the world's sixth-largest energy consumer. Although thermal power plants generate 75 percent of the electricity consumed in India, a significant 21 percent comes from hydroelectricity. Nuclear and wind power only constitute four percent of India's total energy production. With the threat of depleting non-renewable resources and the fact that we have numerous perennial and seasonal rivers, the importance of hydroelectric plants become very evident.

The pros and cons of dam building continue to be debated upon. Large dam construction is an expensive undertaking. While dams have enhanced agricultural productivity in India, there is no evidence that they have been cost effective. They also have adverse distributional implications. Water sharing between countries and states has become one of the most contentious issues of the 21st century. It is believed that water, or rather its shortage, will trigger future wars. In India, the distribution of water should ideally be centralised instead of allowing the states to hoard it. Economic policies related to water are often formulated to please public sentiment for electoral gains rather than addressing the real concerns. However, as long as our showers run and taps flow, the urban Indian seldom questions policy. Rural India has been far more proactive in this regard, as they are the main sufferers.

Today, other than issues related to the quality and effective distribution of water, the main concern is the environmental sustainability of dams. The question is, can large dams in India be replaced with smaller, environmentally friendly structures? In a power-hungry and populous agrarian economy like India, which constantly faces the threat of wayward or failed monsoons, the answer is evident.



THE YAMUNA

Pages 152-153: *A guru and his young disciple sort flowers for the temple rituals at the ghats of the Yamuna River in Vrindavan, Uttar Pradesh.*

The Yamuna, which is the principal tributary of the Ganges, runs a course of almost 1400 km through the states of Uttaranchal, Himachal Pradesh, Haryana, Delhi and Uttar Pradesh, before it meets the Ganges at Allahabad. It also creates physical state borders between Himachal Pradesh and Uttaranchal and further down, between Haryana and Uttar Pradesh. Along with its tributaries, it forms the highly fertile Indo-Gangetic plain, which supports almost 57 million people, making it one of the most populated regions in the world. The Yamuna alone is responsible for more than 70 percent of the water supply in the National Capital Region.

While the Ganges has always been associated with benevolence and redemption, Yamuna, her geographical twin, which rises

The Sangam, *the confluence of three rivers—the Ganges, Yamuna, and mythic Saraswati—is one of the most revered spots in Allahabad.*

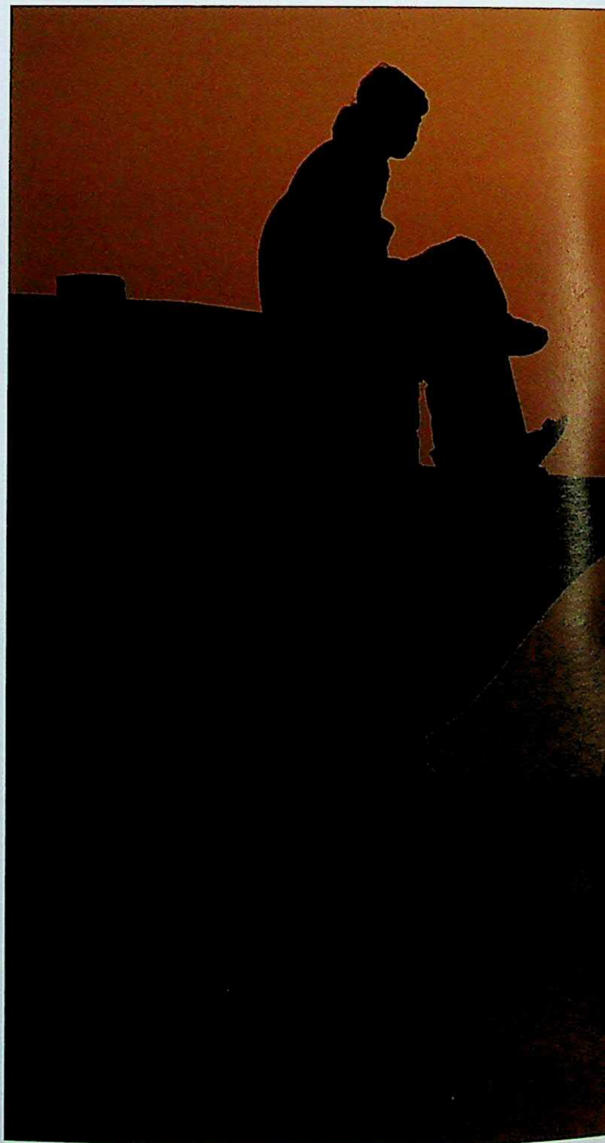
close to the same glacial source has rather uncanny associations with death.

According to legend, Yama (the god of death) and Yami (Yamuna) were twins born to Surya (the sun god) and Samjna (consciousness). The identity of Yamuna as Yama's twin in some religious texts and as his life-partner in others, continues intermittently throughout Vedic literature. References can be found in the tenth book of the Rig Veda, where Yami desires Yama, and begs him to yield to her. However, Yama remains adamant in his refusal. Despite this confusion, being associated with Yama gave Yamuna the power to grant a kindly death. On the day of Bhratridwitiya (during Diwali) sisters pray to Yama and Yamuna for the long and prosperous lives of their brothers.

Clockwise from top left:
Evening prayers at the ghats of Yamuna, Vrindavan.

Every morning hundreds of pilgrims congregate at the banks of the Ganges and Yamuna in Allahabad for a holy dip and prayer rituals.

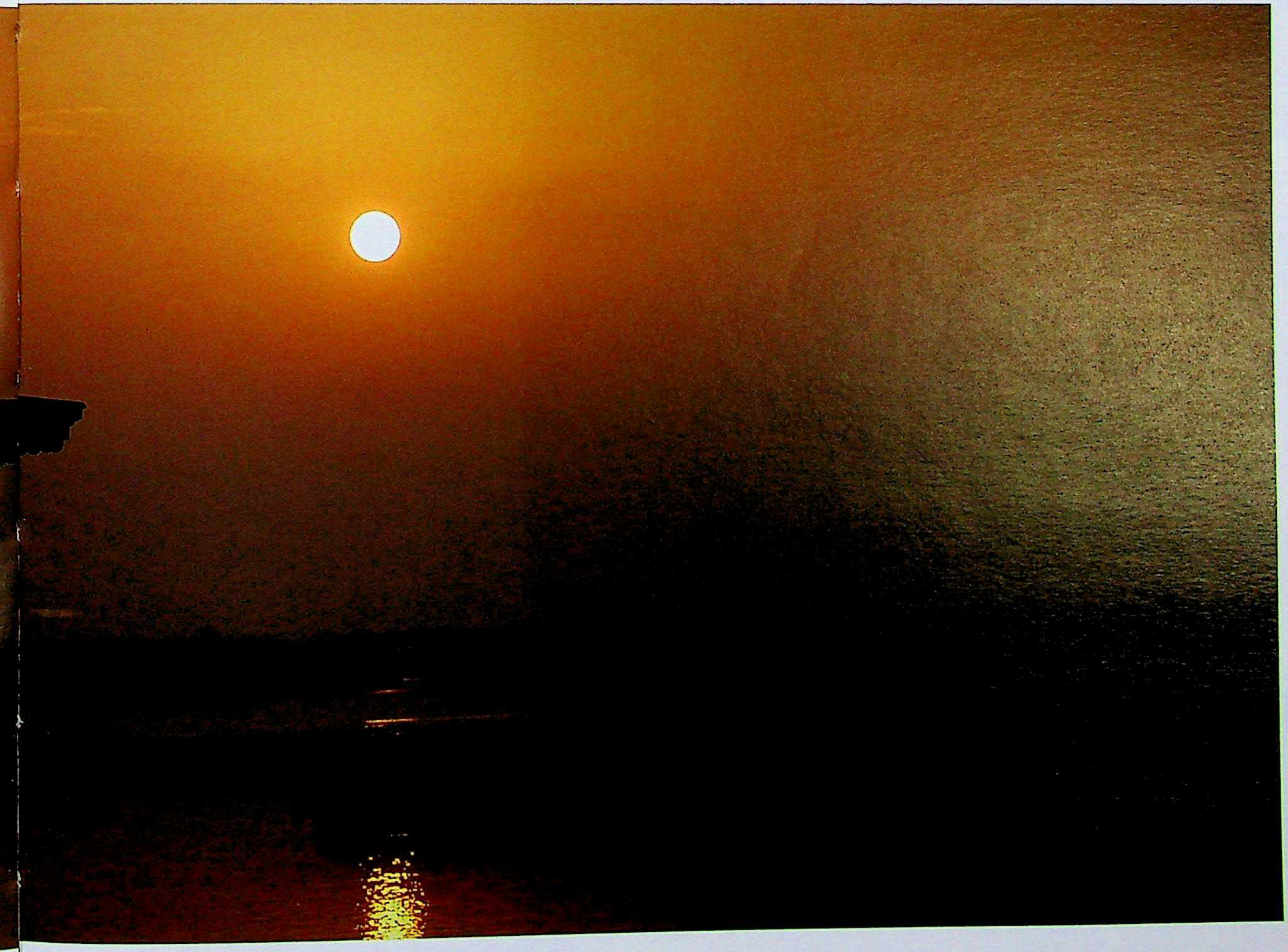
A solitary pilgrim is silhouetted against the setting sun on the ghats of Yamuna at Vrindavan.



A Brahmanic tale narrates that Yama was the first mortal to die, leaving behind a disconsolate Yami. During the early stages of creation, the concept of night did not exist and the days ran into each other as one continuous stretch. Because of this, it became extremely difficult for Yami to accept her loss, as time seemed to stand still. The gods were worried about Yami's condition and decided to intervene. They created night and it was decided that darkness would envelop the earth between the time of Yama's death and Yami's notion of the present moment, which was stagnant. As darkness broke the monotony of continuous daylight, it helped lessen Yami's grief and eventually enabled her to distance herself from the death of her partner.

Another story narrates how Yamuna came to be named. Unable to tolerate the brilliance and heat that her husband Surya emanated, Samjna would shut her eyes in his presence. The sun god was greatly annoyed by his wife's behaviour and chided her. Although Samjna tried to keep her eyes open, her best efforts failed, as the radiance made her eyes water. Surya told his wife that since her eyes fluttered in his presence, the daughter born to them would be wayward and would be called Yamuna. However, he assured her that Yamuna would be worshipped as a goddess. The waywardness of the river is borne by the fact that the Yamunotri temple in Uttaranchal (the principal shrine of the goddess) has to be repaired every few years due to the destruction caused by avalanches and landslides.

Most casual travellers and pilgrims consider Yamunotri to be the source of the Yamuna. However, this is far from accurate for the geographical source of the river is Saptarishi Kund, a glacial



The hot spring at the Yamunotri Temple allegedly possesses curative properties.

lake above Yamunotri. Blocked by snow for most part of the year, it is accessible only to experienced trekkers. The lake derives its name from the seven great sages who lived here and performed great penances.

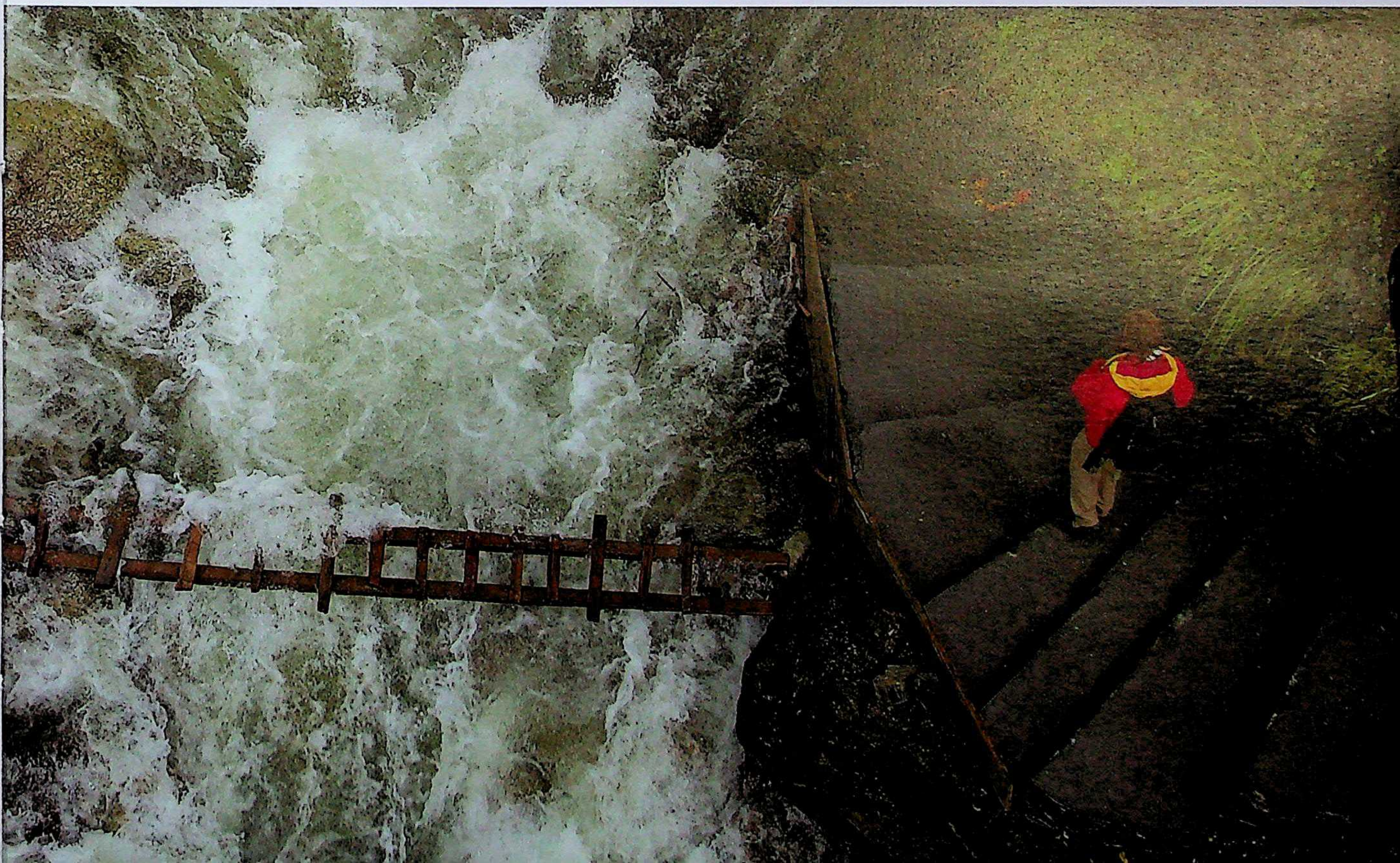
To reach Yamunotri, one has to first reach the quaint village of Janki Chatti, (approximately 90 km from Rishikesh.) From Janki Chatti, a steep 5 km trek along the feeder streams of the Yamuna leads to a ridge below the shrine. The gradient gradually reduces and the path opens out to a semicircular gorge above which the Yamuna begins her descent. From here, it is an easy ramble across a rusted bridge to the temple. The escarpment above the gorge has been decapitated to provide space for ever-proliferating hotels and dharamshalas. The far side of the gorge below the escarpment is full of natural chimneys that spew hot water and steam from geothermal springs, creating a blanket of mist. A careful glance through this camouflage exposes how apathy and a lack of civic sense can destroy a river. Mineral water bottles and plastic bags float downstream, trying hard to make their escape into the plains where environmentalists can discuss them at length.

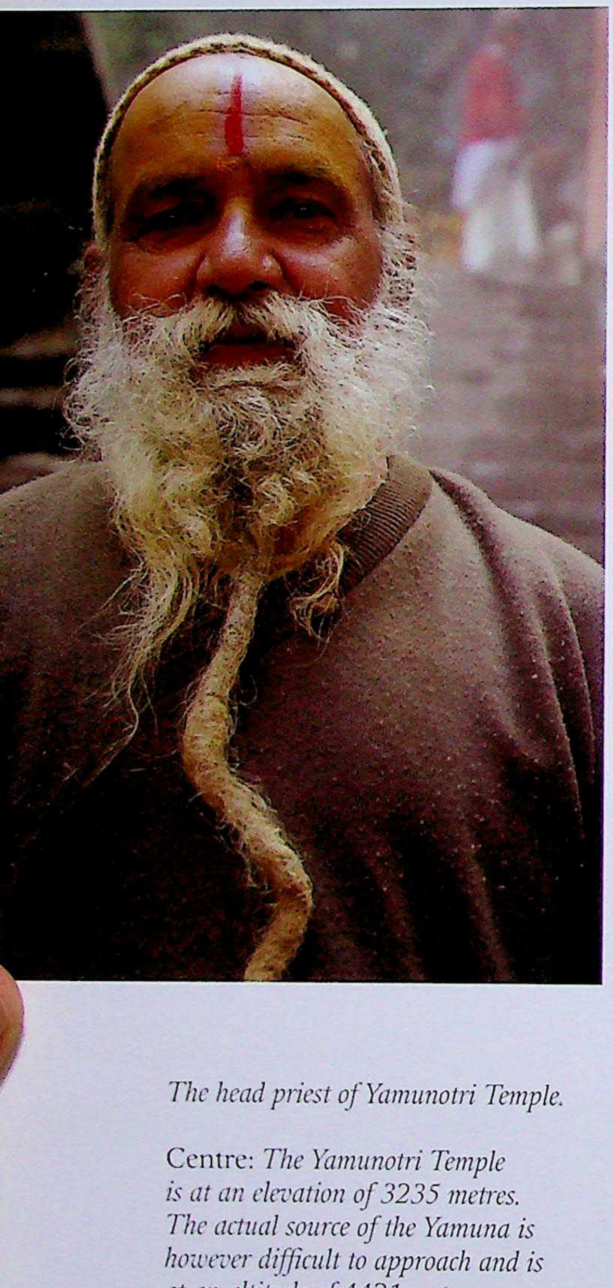
The temple itself is a modest structure overlooking the gorge, surrounded by the usual plethora of shops that cater to pilgrims. Just below the temple is a tank where water from the hot spring is mixed with cold water to facilitate bathing. Water temperature in the smaller tank near the sanctum exceeds 70 degrees centigrade; rice and lentils cooked here are offered to the pilgrims as prasad.

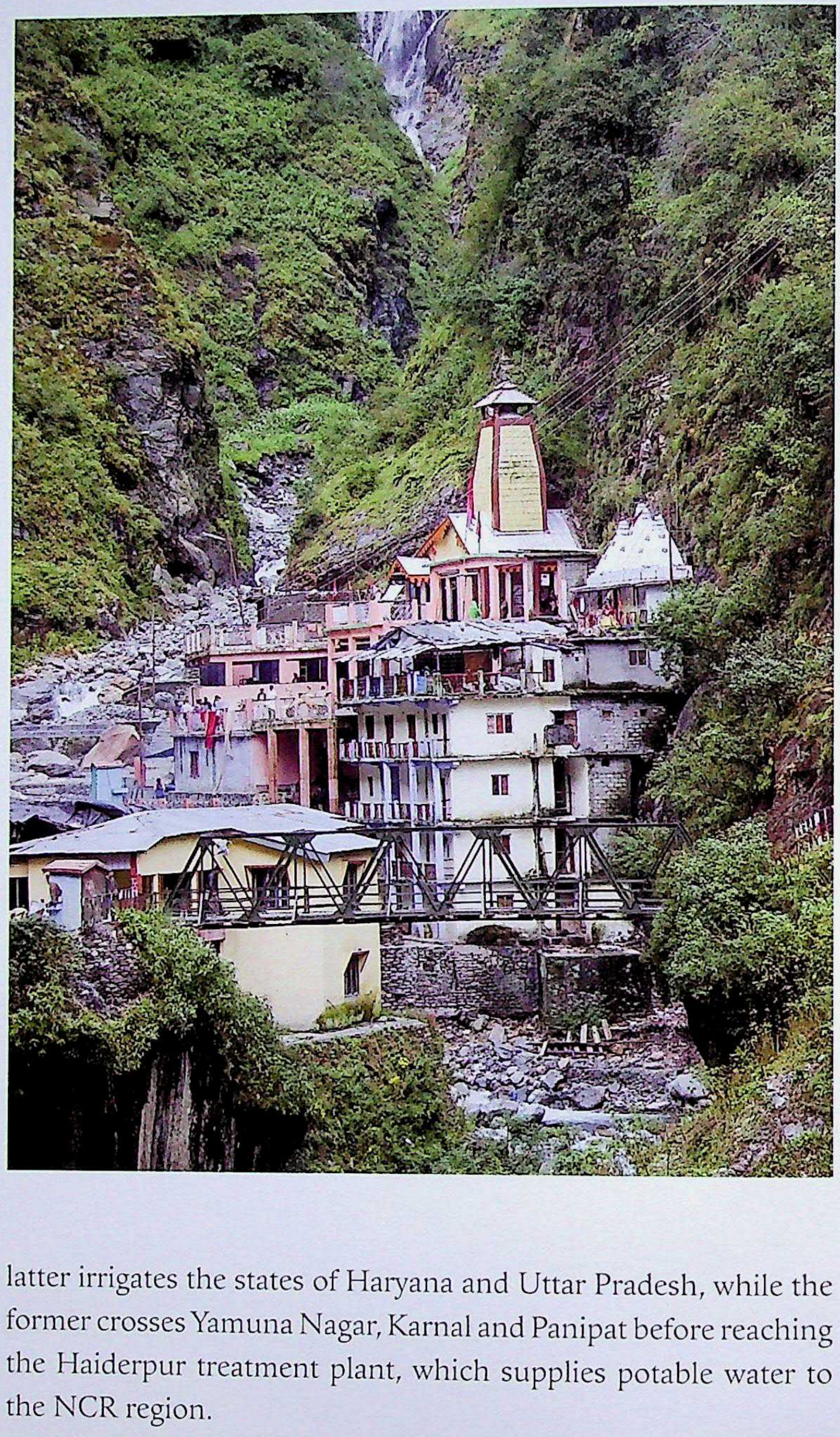
From Yamunotri, the river flows for about 200 km cutting across the Shivalik Range in the lower Himalayas, where it is dammed. The Assan Barrage on the Uttaranchal-Himachal border in the Doon Valley is situated at the confluence of the Yamuna Canal and the Assan River. This man-made wetland also supports a bird sanctuary. From here, the Yamuna flows towards Paonta Sahib, an important centre of Sikh pilgrimage. In 1685, Guru Govind Singh established a new township here after his return from Nahan. A fort-like structure was constructed on the banks of the river, part of which houses the gurudwara and a museum. Weapons used by Guru Gobind Singh during his stay here are on display.

The Yamuna then enters the Yamuna Nagar district of Haryana where the Tajewala Dam splits it into two channels, the Western Yamuna Canal (WYC) and the Eastern Yamuna Canal (EYC). The

A trekker prepares to cross the turbulent Yamuna in Janki Chatti using a makeshift bridge.





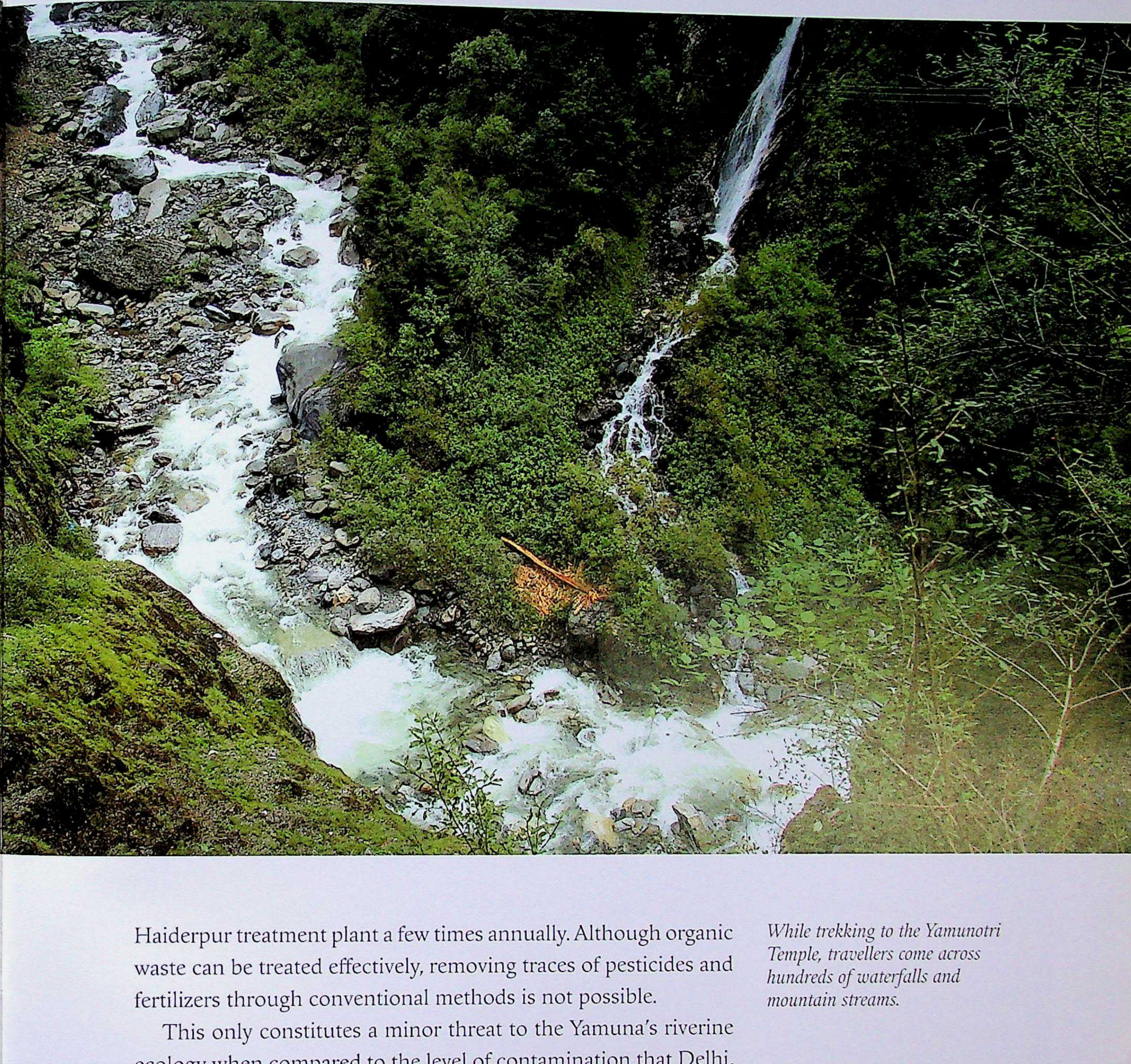


The head priest of Yamunotri Temple.

Centre: *The Yamunotri Temple is at an elevation of 3235 metres. The actual source of the Yamuna is however difficult to approach and is at an altitude of 4421 metres.*

latter irrigates the states of Haryana and Uttar Pradesh, while the former crosses Yamuna Nagar, Karnal and Panipat before reaching the Haiderpur treatment plant, which supplies potable water to the NCR region.

Palla Village, 15 km upstream of Wazirabad Barrage (the reservoir for Delhi) is where the Yamuna enters the capital. Although the National Capital Region is the major source of contaminants, Yamuna's tryst with pollution starts further upstream. There is a parallel channel from Tajewala, which receives both domestic and industrial waste. Sometimes when excess water from the WYC is let into it, the overflow causes pollutants to enter the clean water channel downstream at Karnal. Thus, there is a sudden increase in the pollution levels at the



Haiderpur treatment plant a few times annually. Although organic waste can be treated effectively, removing traces of pesticides and fertilizers through conventional methods is not possible.

This only constitutes a minor threat to the Yamuna's riverine ecology when compared to the level of contamination that Delhi, the biggest culprit, generates. The National Capital produces 1,900 mld of sewage, against an installed wastewater treatment capacity of 1,270 mld. Thus, almost 630 mld of untreated or partially treated sewage enters the river everyday. The Wazirabad Barrage releases very little water in the dry months and only effluents flow downstream.

The Agra Canal splits from the Yamuna at the Okhla Barrage, which is the exit point for the river in Delhi. During the summer

While trekking to the Yamunotri Temple, travellers come across hundreds of waterfalls and mountain streams.

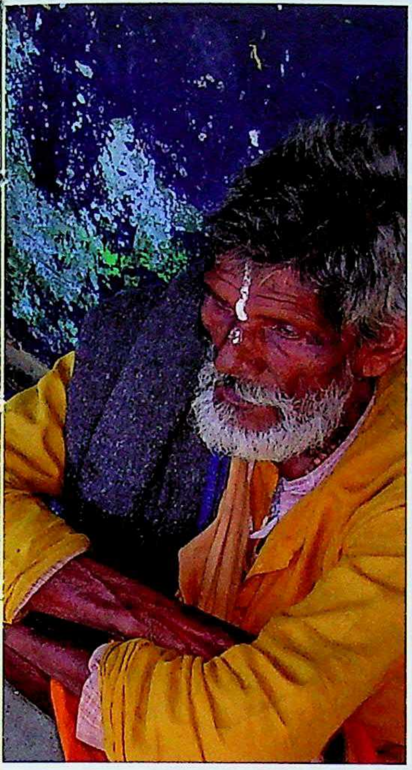
Clockwise from top left:
Pilgrims waiting for the bus that will take them to Janki Chatti, the base camp for Yamunotri.

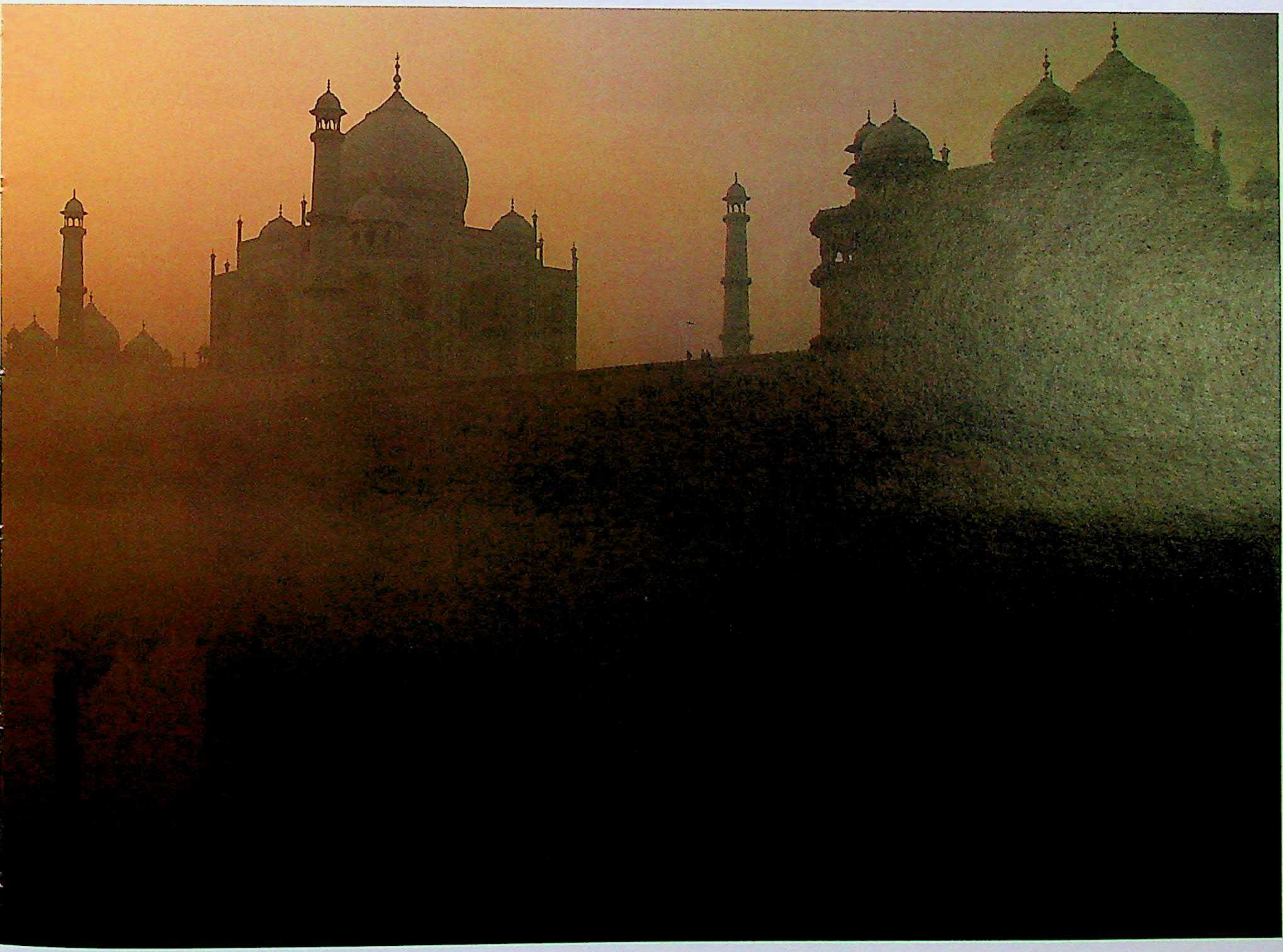
Devotees tie coloured strips of cloth on the branch of a sacred tree on the banks of the Yamuna in Vrindavan as an offering to the river goddess.

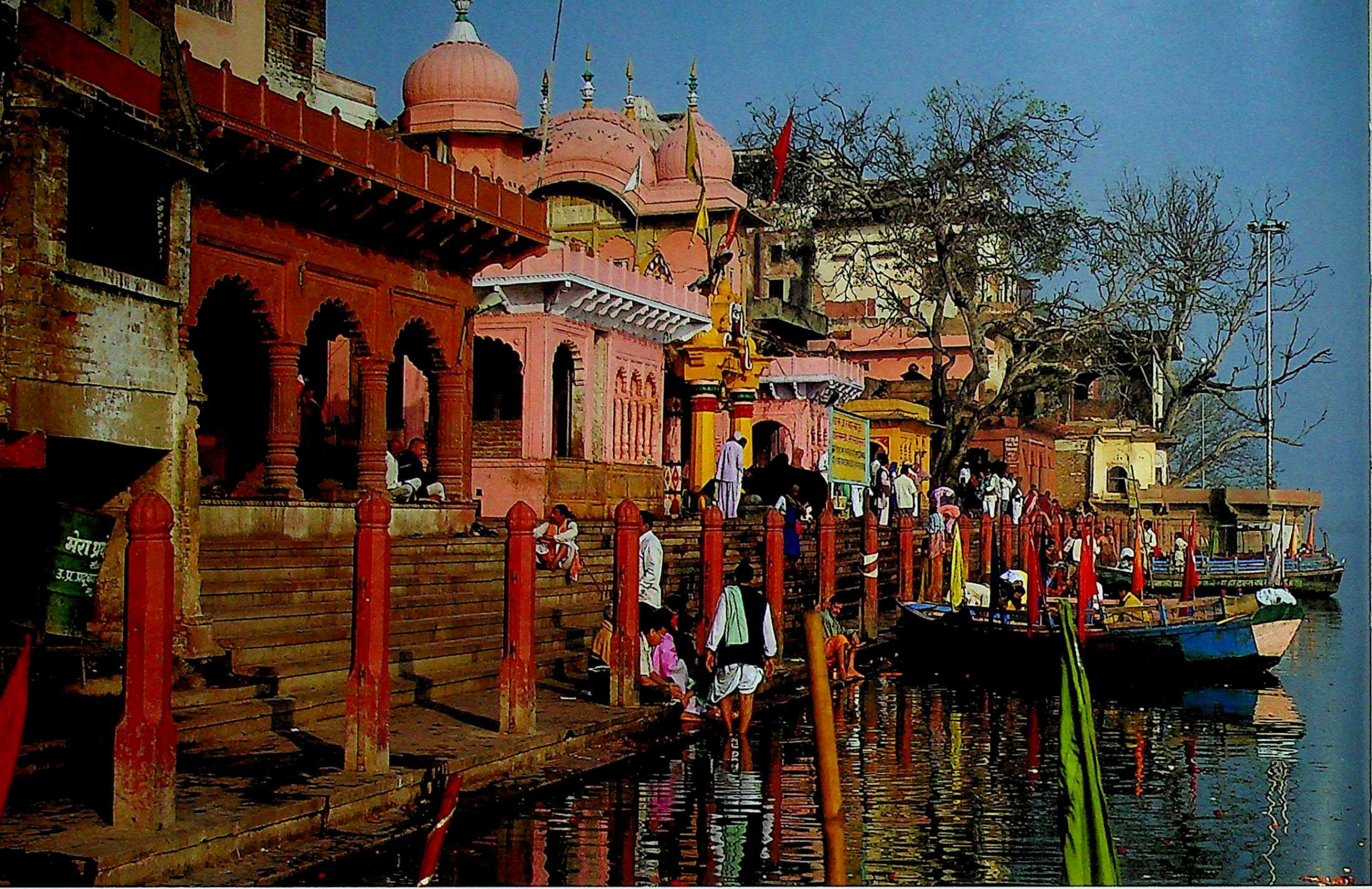
The Taj Mahal in Agra, on the banks of the Yamuna, is undoubtedly one of the most visited monuments in the world. A tribute to eternal love, it is also a symbol of the ostentatious architectural genius of the Mughals.

months, practically no potable water is released from here; instead, discharge from the Shahdara drain joins the river downstream carrying effluents from east Delhi and Noida. This is the second largest polluter of the river after the Najafgarh drain. Today, the municipal water supply in the NCR is so polluted that it is impossible to drink it without secondary filtration. But this only takes care of organic waste; the chemical residue remains intact. While this may not pose a major problem for those who can afford bottled water, it is the less fortunate who suffer. The region is facing an acute water crisis with soaring costs to public health due to pollution and water-borne diseases. Lopsided Government policies on water are also responsible for the crisis. In India, potable water is almost free, and this results in tremendous amounts of wastage.

After Delhi, the Yamuna is reduced to a drain for most part of the year. The almost lifeless river slowly meanders towards the twin towns of Vrindavan and Mathura, which are famous for their association with the Hindu god Krishna. Mathura is a site of great antiquity. By the 5th century BC (during Buddha's time), it was a major metropolis and capital of the Surasena Kingdom. The town continued to prosper under the reign of the Kushanas and remained a centre of power during the Mauryan period from 3rd century BC to 4th century AD. By the time Mahmud of Ghazni arrived in 1071 to play his favourite sport of pillage, Buddhism had completely disappeared from this region. Sikandar Lodi did further damage to the shrines of Mathura in 1500. The town regained its prominence under the auspices of the tolerant Akbar and Jehangir, only to be destroyed by Aurangzeb again.







The riverfront in Mathura is characterized by a long line of picturesque ghats with steps leading to the water's edge.

According to legend, Mathura is the birthplace of Lord Krishna. Today, this little town is still redolent with the legends and music of the frivolous flautist.

As soon as one enters the over-congested town, the significance of Krishna in the lives of locals becomes evident. Calendar images of the godchild are plastered on virtually every surface. Walking through the narrow streets is a rather eerie experience with a million Krishnas watching you. Pilgrims, amateur flautists, overfed cattle and cycle rickshaws share the street with little or no malice. Wayside shrines and sweet shops block pedestrian paths; the latter try their very best to ensure that the pundits maintain their full-figured appearance. In the morning, the combined throngs seem to have a singular agenda and they all converge at the riverfront.

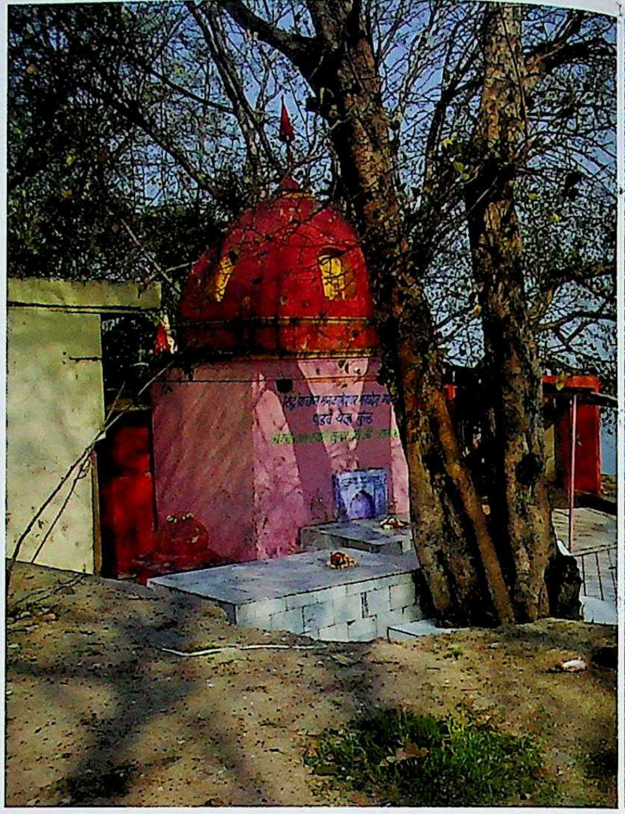
A broken path through a dilapidated archway descends to the bathing ghats where hundreds of pilgrims congregate to seek Yamuna and Surya's blessings. Chirpy young women selling floral tributes and monkeys hoping to snatch a meal block the edges of the path. Pundits and astrologers sit on raised platforms in the arcaded colonnades waiting patiently for customers.

A long line of picturesque ghats adorns the riverfront. Painted by the sun's gloaming brush, arched gateways and temple spires are reflected in the calm waters of the Yamuna. The peal of temple bells echo across the ghats; ill-tempered bulls bellow, and harassed pilgrims grumble while Krishna bhajans are doled out through loudspeakers. Only the women bathing discreetly in their saris are oblivious to everything. They dream of their doe-eyed god and know that he will blind any mischievous sprite that dares gawk at them.

Vrindavan, a village 10 km north of Mathura (once noted for its fragrant groves) is where Krishna spent an exciting youth. While he spent much of his time vanquishing demons, he was legendary for his ability to mesmerize the village belles with the music of his flute. He also regularly hid their clothes while they bathed in the Yamuna—an activity that made him a hero in the eyes of most young men.

There are two overgrown gardens in Vrindavan: Seva Kunj and Nidhi Van. While the former is believed to be the place where Krishna and his female companions indulged in mortal pleasure, the latter is where they rested.

Shops selling religious paraphernalia and floral tributes do brisk business in Yamunotri.

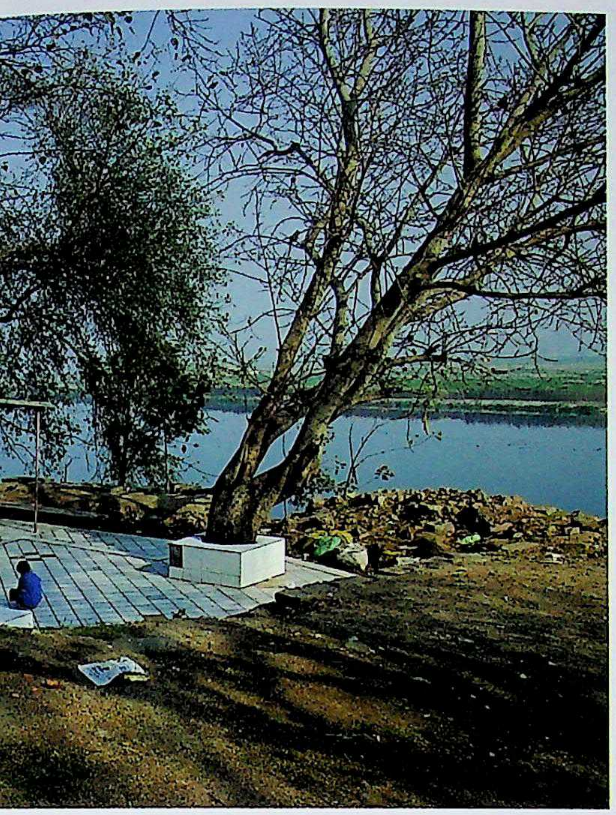


Every morning overcrowded river boats carry hundreds of pilgrims to the Sangam (confluence of the Ganges, Yamuna and mythical Saraswati) in Allahabad for a holy dip.

Centre: *A quaint wayside shrine on the banks of the Yamuna in Delhi.*

There are numerous temples dedicated to Krishna in Vrindavan, but the most renowned among them is the temple of Govind Deo, which dates back to 1590. The ghats of Vrindavan are less chaotic. The few pundits that perform the evening prayers usually keep to themselves. The arcaded corridors and steps that descend to the waterfront are seldom occupied after dusk, making it the perfect setting for a modern day Radha and Krishna.

The most famous town along the Yamuna (other than Delhi, which was always the political epicentre of India) is undoubtedly Agra. It was the capital of the ostentatious Mughal emperors from 1526 to 1658 and is popular with visitors because of its splendid Mughal-era buildings; most notably the Taj Mahal, Agra Fort and Fatehpur Sikri (all UNESCO World Heritage Sites). Shah Jahan is remembered by history more for the Taj Mahal than for his exploits on the battlefield or his administrative skills. The legendary romance of Shah Jahan and his beloved wife Mumtaz Mahal manifested into the inimitable marble monument. The reflection of the Taj in the calm waters of the Yamuna is perhaps the most iconic representation of Agra and the Mughal infatuation for architectural finesse. Perhaps very few monuments in the world evoke a similar response and this is what makes the Taj one of the most visited tourist attractions in the world.



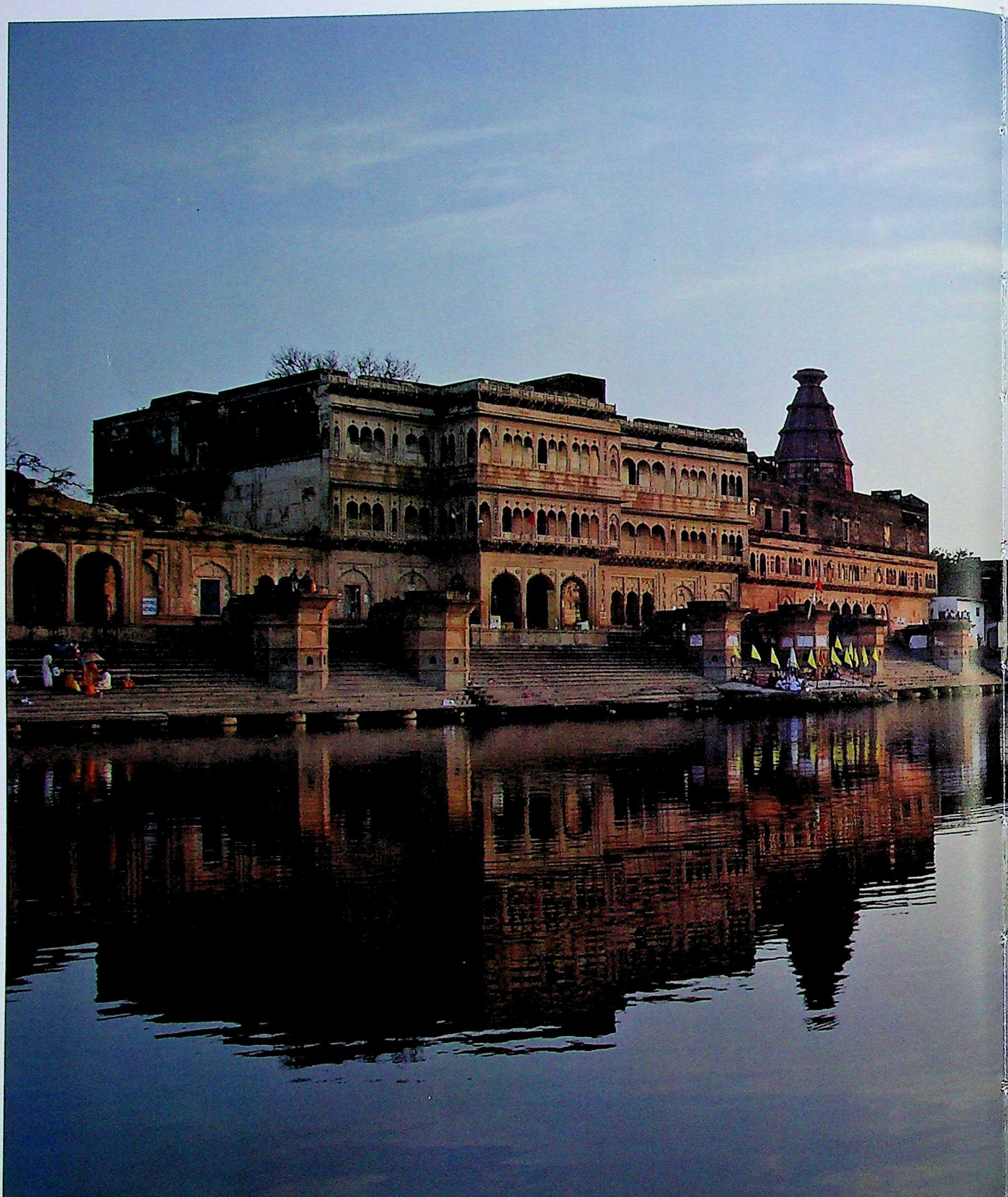
One of the less unsightly scenes along the Yamuna in Delhi.

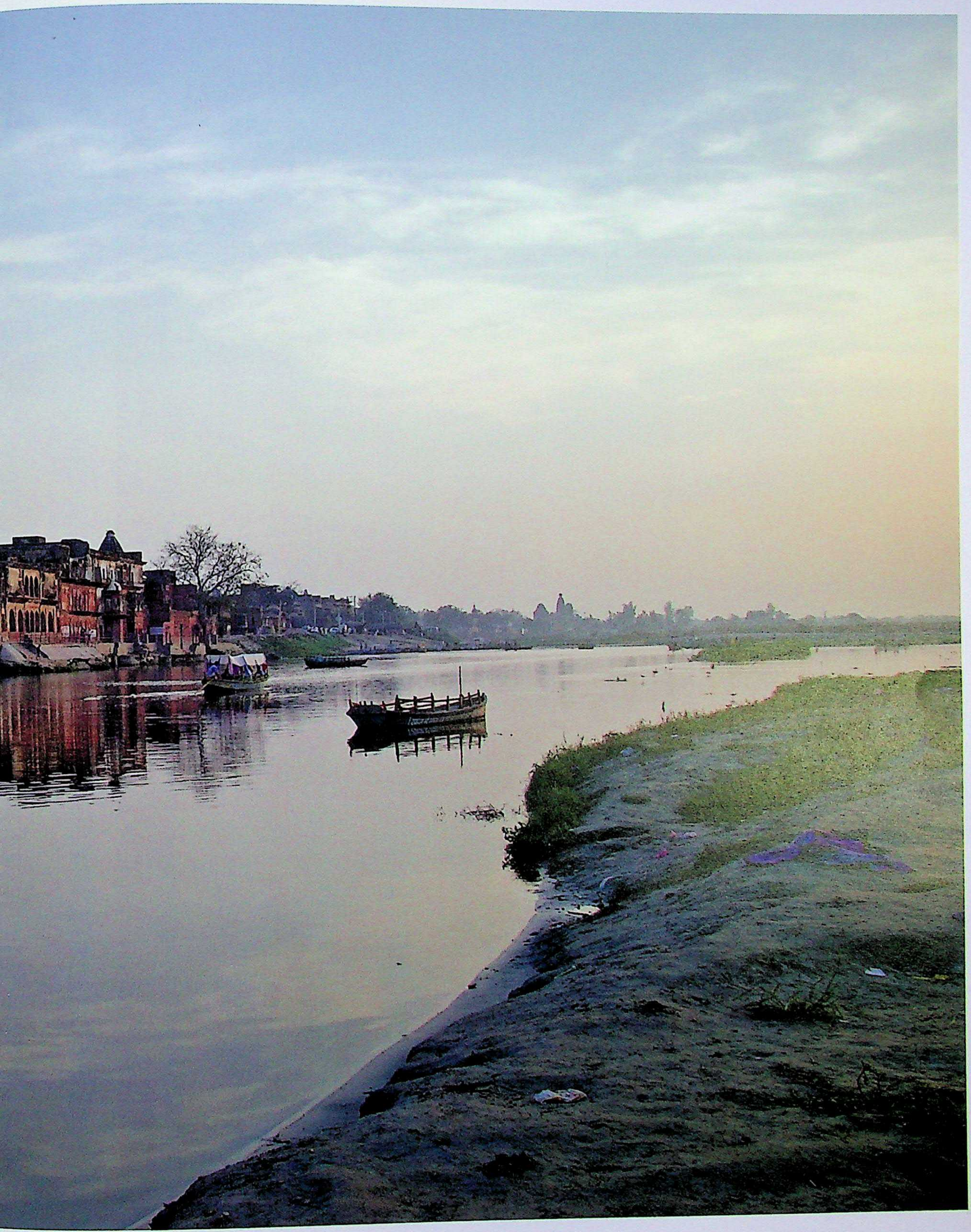
Pages 168-169: *Arched gateways and a temple spire are reflected in the Yamuna at Vrindavan.*

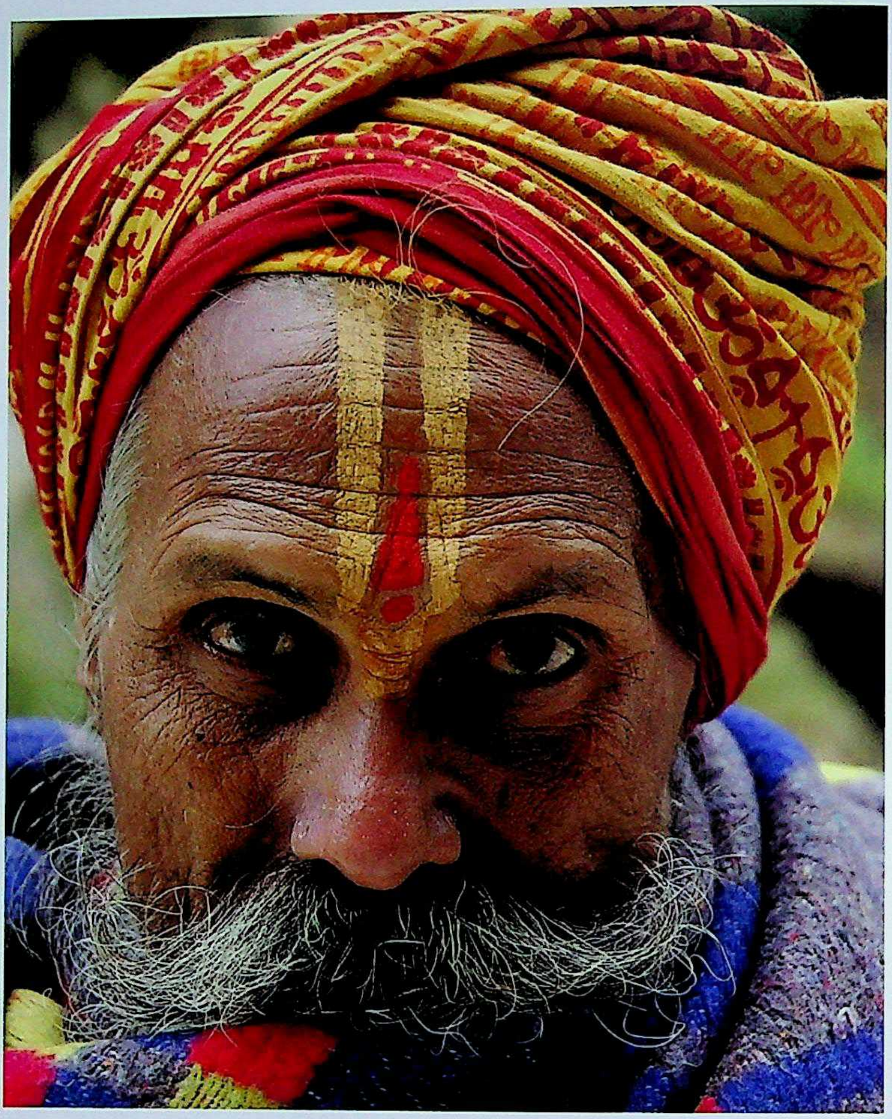
But look beyond the edifice and the callousness of the local administration becomes evident; Agra is one of the most polluted towns in Uttar Pradesh. One only has to walk behind the monument (along the Yamuna) to see how farcical the measures to curb pollution have been. While state of the art dustbins have been installed on the premises of the Taj, with ominous signs that ensure non-littering, very few know that garbage is dumped regularly behind the monument. The level of pollution is so high, that fish kills along this stretch of the river are a regular occurrence.

The Yamuna merges with the Ganges at Prayag, which is one of the most famous Hindu pilgrimage towns in India. In 1583, the Mughal Emperor Akbar renamed the city Allahabad. Incidentally, the 'Allah' in the name does not signify god in Islam. The usage of the word comes from Din-Ilahi—the syncretic religion Akbar experimented with. Hindus believe that Brahma offered his first sacrifice here after creating the universe.

Allahabad enjoys a position of great prominence in Hindu religion and mythology, as it is situated at the confluence of the Ganges and Yamuna. Hindus also believe that the River Saraswati has managed to escape extinction by descending vertically through a subterranean passage and joining her sacred sisters here.





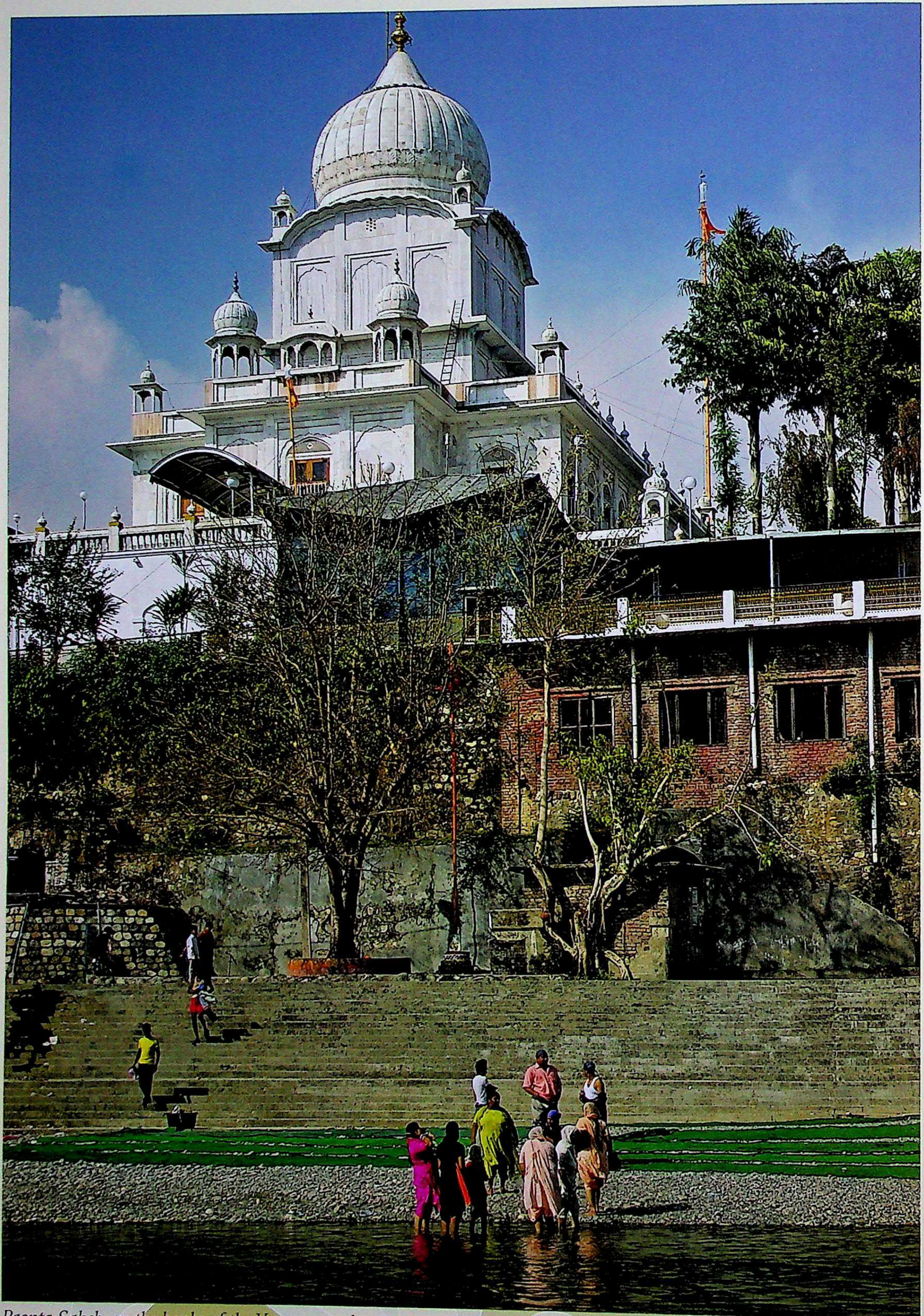


Allahabad: A pundit in multicoloured regalia.

Facing page: *During major festivals hundreds of makeshift shops sell religious paraphernalia along the water's edge in Allahabad.*

In the medieval period, as the neighbouring Sharqui Dynasty of Jaunpur witnessed a fluctuation in its political fortunes, Allahabad gradually rose in importance and acquired the status of a Mughal Suba (state). Acknowledging the immense navigational potential of its rivers and the entrepreneurial importance of the city as a centre for boat-making, Akbar built a fort here, overlooking the Yamuna. Today, only flat-bottomed riverboats ferrying pilgrims ply on this stretch and the fort is now an army garrison. The confluence of the Ganges, Yamuna and now extinct Saraswati is called the Sangam and is the holiest spot in Allahabad. Temporary platforms are erected for the hundreds of pilgrims who come every day to offer prayers. During the Kumbh Mela, this number can swell to millions.

In theory, the Yamuna ends her journey here; but ask any pilgrim and he will beg to differ, for the Yamuna just pauses here, before accompanying the Ganges on a long journey to the sea.



Paonta Saheb, on the banks of the Yamuna on the Uttaranchal-Himachal border is very popular with Sikh pilgrims.

Facing page: *The deceptively beautiful Yamuna that flows past the outskirts of Delhi is so polluted that it can hardly sustain life.*

The Yamuna action plan

Launched in 1993, the Yamuna Action Plan (YAP), now in its second phase, is a bilateral project between the governments of India and Japan. It is one of the largest river restoration projects in India. The government of Japan via the Japanese Bank for International Cooperation (JBIC) has provided aid of 13.33 billion Yen to carry out the project. This is being executed by the National River Conservation Directorate in conjunction with the Ministry of Environment and Forests (Government of India).

Phase-I of the Yamuna Action Plan (YAP-1) covered Delhi, eight towns of U.P. (Saharanpur, Muzaffarnagar, Ghaziabad, Noida, Vrindavan, Mathura, Agra and Etawah) and six towns of Haryana (Yamunanagar, Karnal, Panipat, Sonepat, Gurgaon, and Faridabad).

The project was scheduled for completion by April 2000, but was later extended until February 2003. Priority was given to the construction of drain interceptors, diversion sewer lines, sewage pumping stations, and sewage treatment plants (STP). Thirty-two STPs were constructed and a total sewage treatment capacity of about 735 million litres per day was created. During the extended phase of YAP-1, more emphasis was given to non-sewerage issues.

YAP –1 under the aegis of the Municipal Corporation of Delhi did not lay much stress on public awareness. This prevented it from becoming a peoples' campaign and failed to involve the masses. However, a public participation and awareness programme was initiated later to generate awareness among the beneficiaries in the project area. Despite this, YAP – 1 was unable to reduce the levels of pollution in the Yamuna, especially in the 22 km Delhi stretch. A few new towns in UP were identified that were adding to the pollution loads in the river. Hence, YAP – II was launched to combat pollution in the most critical stretches of the river.

ACKNOWLEDGEMENTS

It would be impossible to acknowledge the role of all the individuals who helped convert our dream into reality, as the figure would perhaps run into hundreds. However a few come to mind immediately. Writers have capricious moods and we thank our families for bearing with us and for the emotional support they tendered through the course of this difficult project.

A special thanks to our Publishers, Niyogi Books for publishing this book. Thanks are also due to the editorial and design team without whom this book would not have taken shape. We would like to thank Nirmal Kanti Bhattacharjee for the translation of the Bengali song on the title page. We are indebted to the Indian Army for their hospitality and support, as it would have been impossible to work in the remote north east without their help. We also thank Rambha Gulati, Sanjeev Gupta, Bakul Divekar and friends for believing and supporting the river project in its nascent stages. Thanks are also due to Mr. SB. Misra of the Minex Foundation for his initial support and Mr. Veer Bhadra Mishra of the Sankat Mochan Foundation for extending his hospitality in Varanasi.

A very special thanks to our pack mules, guides, boat men, porters, pilgrims and all those people who call the river banks their home.
Your visual river *yatra* ends here, but for us a new journey awaits…

GLOSSARY

Aarti: act of worship celebrating light

Adivasi: a heterogeneous set of ethnic and tribal groups who claim to be the aboriginal population of India

Agni: fire; sacred fire; fire god

Alaknanda: one of the perennial mountain streams that rises in the Nanda Devi Peak and feeds the Ganges

Ambika: another name for Parvati

Amrit: a divine nectar which was believed to bestow immortality

Ananda: bliss; the bliss of union with Brahman

Aqueduct: a bridge that carries a canal

Aryan: fair-skinned tribes from the Steppes of Central Asia who entered India through the passes in the Hindu Kush Mountains

Ashram: hermitage, retreat or place of quiet and solitude, often in a forest, where a Hindu sage lives alone or with his disciples

Asvamedha: probably the most prestigious of Vedic sacrificial rites, where a horse is sacrificed in a *yajna* by the king whose supremacy has been acknowledged by the neighbouring kings

Barrage: a bridge across a river that holds or diverts water

Bhagirathi: one of the rivers that feeds the Ganges

Bhajans: hymns in praise of a deity

Bhakti Sect: a progressive sect founded essentially by social reformers from backward classes who rejected the age-old Brahmin ideology of Brahmins being mediators between god and men

Bhumi: earth, level or horizontal division

Bhuta: goblin, ghoul

Brahma: the god of creation in Hindu mythology, the chief god of Brahmanism, the world-soul

Brahman: the priestly class among Hindus

Brihaspati: Vedic god of wisdom associated with the planet Jupiter

Canal: an artificial water channel for navigation or irrigation

Chakra: wheel; frisbee like weapon with sharp edges

Channel: the passage through which a river flows

Chela: disciple and student of a guru

Confluence: the place where two or more rivers meet

Dam: a barrier that holds or diverts water

Darshan: literally 'view' or 'sight of' referring to audience with a deity

Delta: a geographical feature at the mouth of a river formed by the build-up of sediment

Deva: male deity; literally 'shining one'

Devi: female deity

Dharma: originally the natural condition of things or beings, or the ethical code of righteousness

Distributary: a branch of a river that carries water away from the main channel

Diya: a lamp made of clay with a cotton wick dipped in *ghee*/oil

Doab: the land mass between the Ganges and Yamuna rivers

Drainage Basin: the area of land drained by a river and its tributaries

Dravida: Southern style of temple architecture

Eastern Ghats: a discontinuous range of mountains along India's eastern coast that runs parallel to the Bay of Bengal

Erosion: the wearing away of land by natural forces

Esoteric: mysterious, obscure

Fault line: a planar fracture in the earth's crust that is the result of differential or shear motion in seismic zones

Gana: imp, dwarf

Ganesh Chaturthi: festival associated with the Hindu elephant-headed deity Ganesha, usually celebrated (between August and September) in the Hindu month of Bhadrapad

Ganesha: elephant-headed God who takes away all obstacles and is the God of good fortune

Ganga: the River Ganges is levitated to the status of a goddess in Hindu philosophy

Garbagriha: sanctum sanctorum

Ghats: stepped embankments on the edge of a river, used for prayers and bathing

Glacier: a perennial mass of ice, which moves over land

Global warming: the increase in the average temperature of the earth's atmosphere due to increased concentration of greenhouse gases

Gopis: milk maids (celebrated in the myths of Lord Krishna)

Gorkhas: Nepali people known for their loyalty and martial skills

Gramadevatas: village deities

Guru: enlightened spiritual teacher

Hanuman: monkey god in Hindu mythology who had supernatural strength and was a close companion of Rama (the protagonist in the Hindu epic *Ramayana*)

Headwater: water at the source of a river.

Hinduism: Vedic knowledge and teachings

Holi: Hindu festival of colours

Hydrological cycle: the water cycle which describes a continuous movement of water on, above and below the surface of the earth; water can change states between liquid, vapour, and ice at various points in the cycle

Indra: God or demi-god holding the title of 'king of the gods' there were many Indra's in the various *Yugs* (celestial mythological time span, each *Yug* was equal to 10,000 human years)

Jainism: a sect founded by Vardhamana, older than Buddhism and still extant in India. The Jains lay great stress on ascetic exercises and self-mortification, which the Buddhists declare to be injurious

Jyotirlinga: twelve sacred shrines believed to be the abodes of Shiva

Kailash: a mountain sacred to both Hindus and Buddhists in western Tibet

Kalapa: epoch

Kalasha: pot or vase

Kali: an incarnate of the omnipotent earth goddess, characterized by ferocious appearance

Kamandalam: long spouted water pot

Karma: the law of action, retribution, results of deeds done in a past life, accumulated goodness; that moral kernel (of any being) which alone survives death and continues in transmigration

Kirtan: hymn in praise of a deity

Krishna-Janmashtami: Hindu festival celebrating the birth of Lord Krishna

Krishna: eighth avatar of Vishnu

Kshatriya: people of political values, belonging to the second of the four Hindu classes of society, traditionally a warrior, ruler or administrator

Lakshman: the brother of Lord Ram in the epic *Ramayana*

Lakshmi: Goddess of prosperity, fortune and beauty; consort of Vishnu, sometimes called Sri

Linga: phallic symbol associated with the God Shiva

Loka: place; realm, as the deva loka, the realm of the gods

Mahabharata: the Hindu epic in which five brave and just princes helped by the frivolous flautist Krishna took on an army marshalled by their hundred egregious cousins who annexed their kingdom by deceit

Mahadeva: 'Great God', one of the names of the deity Shiva

Mahadevi: 'Great Goddess', the Mother Goddess of Hinduism

Makara: crocodile-like mythical beast

Mala: garland

Mandal: Hindu temple which can also be used for socio-cultural purposes; group of organizers

Mandapa: pillared hall of a temple or the canopy under which a wedding ceremony takes place

Mandir: a Hindu temple

Mantra: spiritual or sacred syllables or sounds which contain in their essence divine cosmic power

Manu: Vedic original man, founder of human culture

Mata: mother, a compound often used in the names of female goddesses

Maya: illusion, particularly the illusion of the transient, impermanent, phenomenal world

Mayur: peacock

Moksha: enlightenment

Monsoon: seasonal rains caused by change in wind direction in south-east Asia

Mudra: forms, stances, postures

Nandi: bull, the vehicle of Shiva

Narasimha: Vishnu's Lion incarnation

Nataraj: Shiva as lord of the cosmic dance

Nirvana: liberation, the state of peace

Pandals: public tents generally erected during festivals

Pantheon: generally a collection of Gods

Parashurama: sixth avatar of Vishnu

Parvati: goddess, the consort of God Shiva

Pashupa: (also known as Pashupati Nath) Shiva depicted as the protector of livestock, greatly revered in Nepal

Pinda: four balls of rice prepared on the twelfth day after someone has died to symbolize the union of the deceased with his or her forebearers

Pitha: pedestal

Pooja: Hindu honour, respect or worship of a deity, flower offerings

Prakriti: great Nature, matter

Prasad: the grace of the deity given to the worshipper in the form of food after worship

Prayashchitta: penances, recompense

Prithvi: earth

Pujari: temple or shrine priest who performs *pooja*

Puranas: sacred and venerated Hindu texts presenting Hindu theology

Purohit: a family priest or guru

Purusharth: objectives of a human life

Radha: a milk maid who was the favourite of Lord Krishna and an incarnation of the Goddess

Raj: refers to the British rule in India

Ram Navami: Hindu festival celebrating the birthday of Lord Rama

Rama: seventh incarnation of Vishnu and hero of the epic The Ramayana

Ramayana: Hindu epic scripture dealing with the heroic exploits of Lord Rama

Ratha: chariot

Rig Veda: Veda of chants, one of the four Vedas and the oldest Aryan Hindu scripture

Rishis: ancient Vedic seers, enlightened men who composed Vedic hymns and Upanishads

Rudra Shiva: one of the incarnations/depictions of the angry Shiva

Sadhu: holy man

Saivites/Shaivites: devotees of the Hindu deity Shiva

Sakara: 'with form', referring to the manifest aspects of Brahman

Sama Veda: one of the four Vedas, literally, 'Knowledge of Chants'

Samadhi: absorption, bliss, trance

Samsara: the ocean of birth and death, the transience of life.

Sandhyavandana: prayers offered at Sunrise and Sunset to the Sun god (surya)

Sangha: fellowship of Buddhist disciples, the Buddhist church, an assembly of at least four has the power to hear confession, to grant absolution and to admit persons to the priesthood

Saraswati: Goddess of speech, learning, knowledge and wisdom

Sari: traditional dress for women consisting of a piece of material of five or six metres long which is draped around the body

Sarovar: pond

Savitr: Vedic solar deity

Sediment: fine sand and earth that is moved and deposited by water, wind, or ice

Shaivic: belonging to the cult of Shiva

Shakti: the power of consciousness and spiritual evolution; the female active energy in the universe

Shani: Saturn (levitated to the status of a god in Hindu mythology)

Shankara: the great and renowned philosopher of non-dualistic Vedanta

Shankaracharya: religious leader of the Shaivites

Shankha: conch

Shikara: main dome, or any other main roof element of Vimana

Shiva: form of the Hindu trinity governing destruction and transcendence

Skanda: the God of war

Surya: Vedic Sun God or god of the enlightened mind

Swayambu: an idol, which has formed naturally or is represented in nature

Talapatra Scriptures: Vedic hymns etched on leaves of the Talipot palm

Tantric: esoteric doctrine chronicling rituals and dialogues between Shiva and Shakti

Tara: the Goddess in her role as saviour; also the Hindi word for star

Tirtha: sacred lake or pond

Torana: arch-like gateway, arch-like motif

Tributary: a stream or river that flows into another larger stream or river

Trimurti: the Hindu trinity of Brahma, Vishnu, and Maheshwara (Shiva)

Uma: consort of the male deity Shiva

Upanishads: Vedic philosophical texts or scriptures occurring at the end of the Vedas characterized by mystical and philosophical speculation on the nature of the self and ultimate Reality; also sometimes used synonymously with 'Vedanta'

Upavedas: additions to the Vedic scriptures

Vahana: a Hindu vehicle, sometimes called a mount, that is an animal, mythical entity or chimera (or sometimes a divine attribute) closely associated with a particular deity in Hindu mythology

Vaishnavites: belonging to the cult of Vishnu

Varuna: Vedic deity of water and cosmic order

Vedanta: Vedic philosophy of Self-knowledge

Vedas: the four Vedic ancient scriptures of India, namely the Rig, Sama, Yajur and Atharva

Vihara: monastery

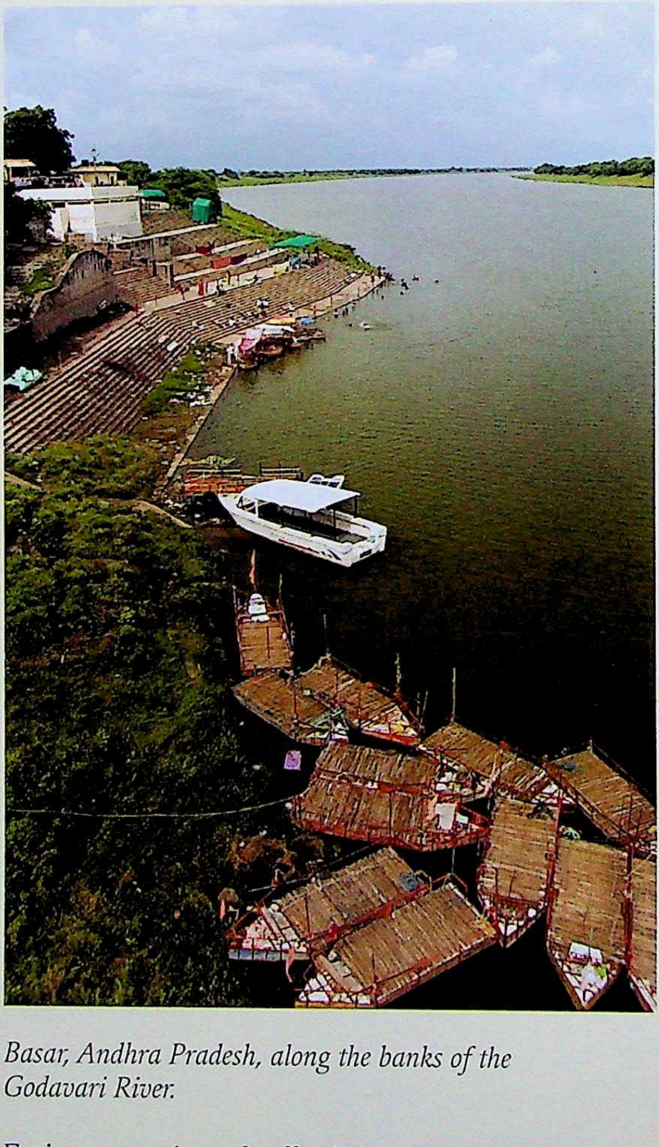
Vimana: shrine

Western Ghats: a mountain range along the western side of India that runs north to south along the western edge of the Deccan Plateau.

Yajna: sacrifice, sacred ritual

Yali: composite mythical beast, part lion-part reptile with horns

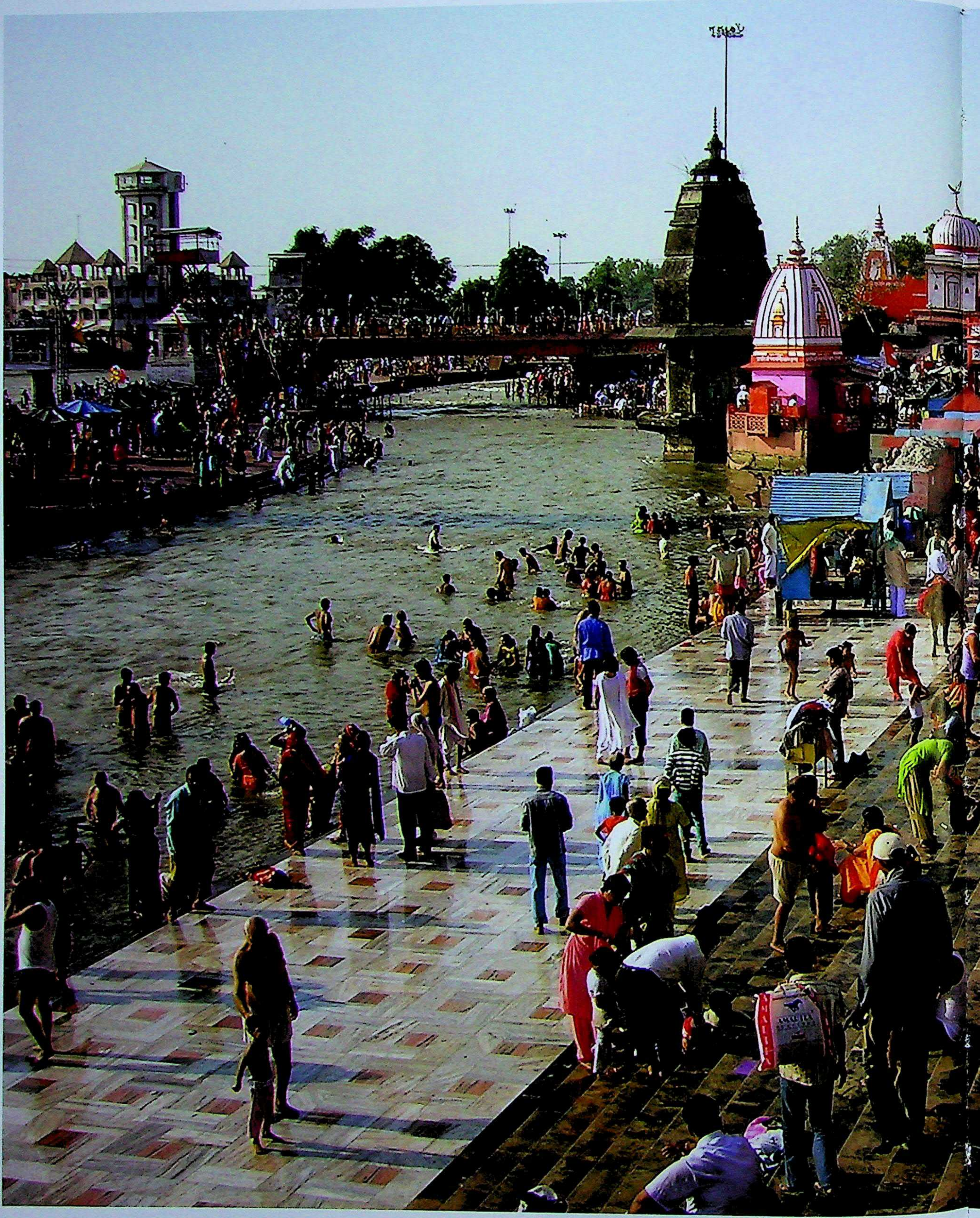
Yama: God of Death; ruler of the realm of the dead

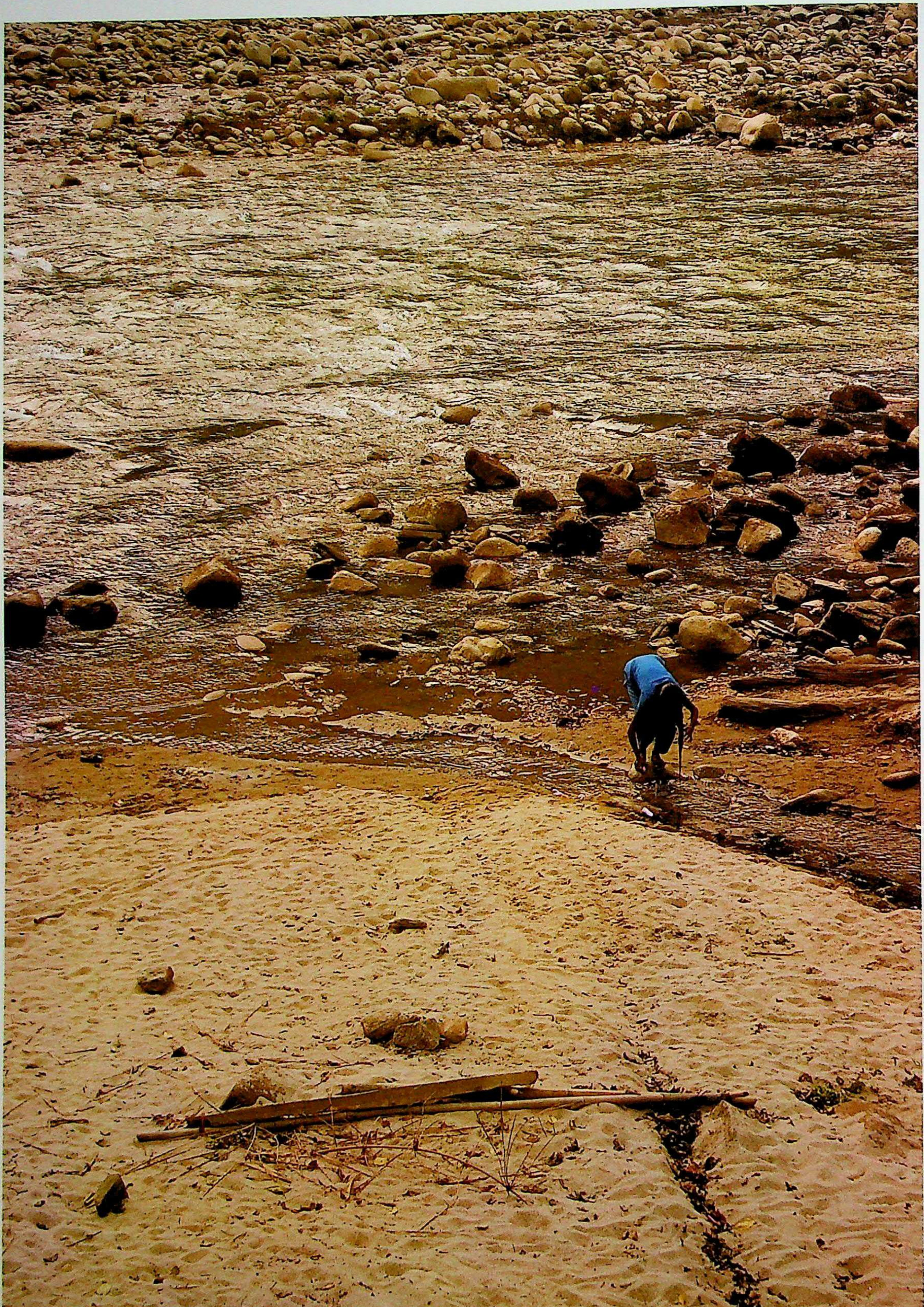


Basar, Andhra Pradesh, along the banks of the Godavari River.

Facing page: *A couple offer their prayers at Satara, Maharashtra.*

Pages 180-181: *Hari-ki-Pauri in Haridwar.*





SELECT BIBLIOGRAPHY

Abramovitz, Janet N. *Imperiled Waters, Imperiled Future: The Decline of Freshwater Eco-Systems.* World Watch Institute, 1996.

Anderson, Terry L and Pamela Snyder. *Water Markets: Priming the Invisible Pump.* The Cato Institute, 1979.

Baldizzoni, Tiziana and Gianni. *Tales from the River Brahmaputra: Tibet, India, Bangladesh.* Shambhala, 1998.

Banerjee, A. and L. Iyer. 'History, Institutions, and Economic Performance: The Legacy of Colonial Land Tenure Systems in India'. *American Economic Review*, 2005.

Biswas, A. and C. Tortajada. 'Development and Large Dams: A Global Perspective'. International Journal of Water Resources Development, 2001.

Bowden, Rob. *Ganges—The River Journey.* Hodder Children's Books, 2003.

Cossi, Olga. *Water Wars: The Fight to Conserve and Control Nature's Most Precious Resource.* New Discovery Books, 1993.

Dalrymple, William. *Sacred India*. Lonely Planet, 2002.

Debroy, Bibek and Dipavali. *The Holy Puranas*. B.R. Publishing Corporation, 1st edition 1994.

Duflo, Esther and R. Pande. *Dams*. MIMEO, MIT Poverty Action Lab, 2005.

Dutta, Arup Kumar. *The Brahmaputra*. National Book Trust, 2001.

J.A Steers. *The Unstable Earth*. Kalyani, 2003.

Kindler, Janusz. *'The Economic Value of Water'*. Published in: Water International, Volume 25, Issue 2, June 2000.

Leopold, Luna B. *Water, Rivers and Creeks.* University Science Books, 1997.

Leopold, Luna B., M. Gordon Wolman and John P. Miller. *Fluvial Processes in Geomorphology.* Dover Publications, 1995.

Majumdar, Lila. *The Story of Our Rivers.* National Book Trust, 1st edition, 1983.

M.N Shastri, *Water*. Himalaya Publishing House, 1st edition, 1995.

Rangachari, R., Sengupta, N., Iyer, R.R., Banerji, P., and Singh, S. *Large Dams: India's Experience.* A WCD case study prepared as an input to the World Commission on Dams, 2000.

Schumm, Stanley A. *River Variability and Complexity*. Cambridge University Press, 2005.

Shand, Mark. *River Dog: A Journey Down the Brahmaputra*. Little, Brown, 2002.

Singh, Udai P. and Otto J. Helweg. *Supplying Water and Saving the Environment for Six Billion People. ASCE Convention, 1990.*

Singh, Satyajit. Taming the Waters: The Political Economy in Large Dams in India. Oxford University Press, 2002.

Thakkar, H. *Assessment of Irrigation in India*. World Commission on Dams, 2000.

Villiers, Marq de. *Water: The Fate of Our Most Precious Resource*. Stoddart, 2000.

World Commission on Dams (2000). *Large Dams: India's Experience.*

Facing page: *Lower reaches of the Subansiri River in Arunachal Pradesh.*

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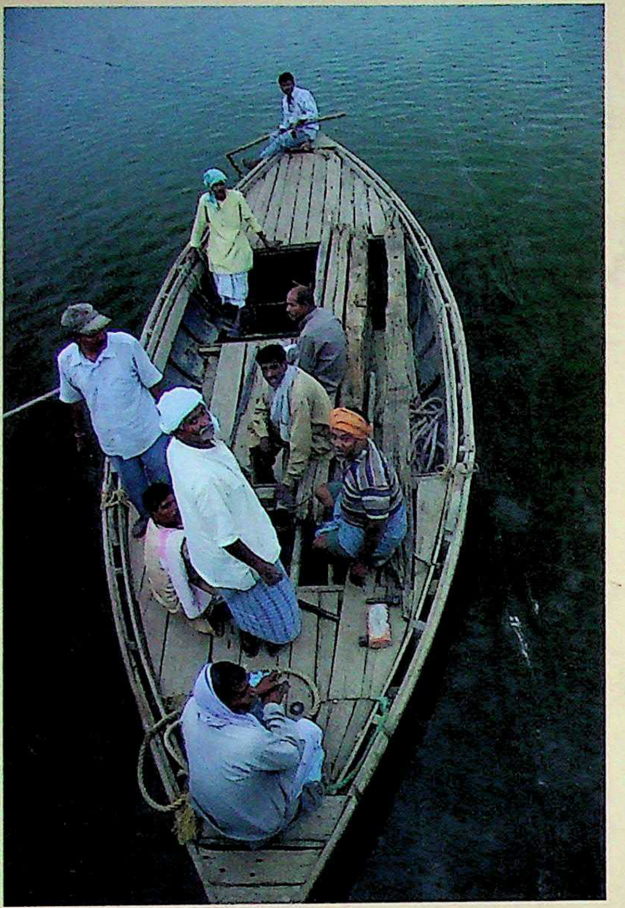

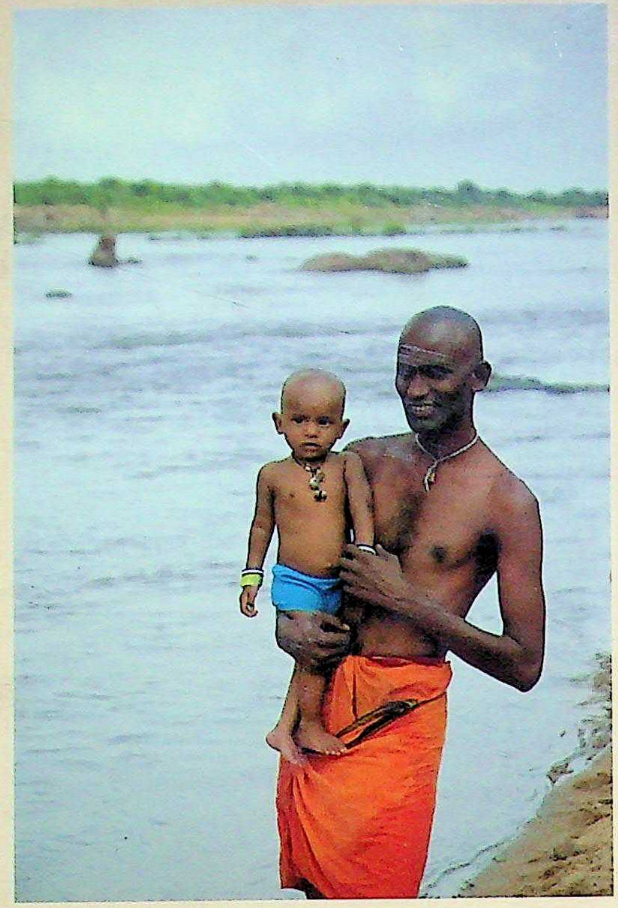

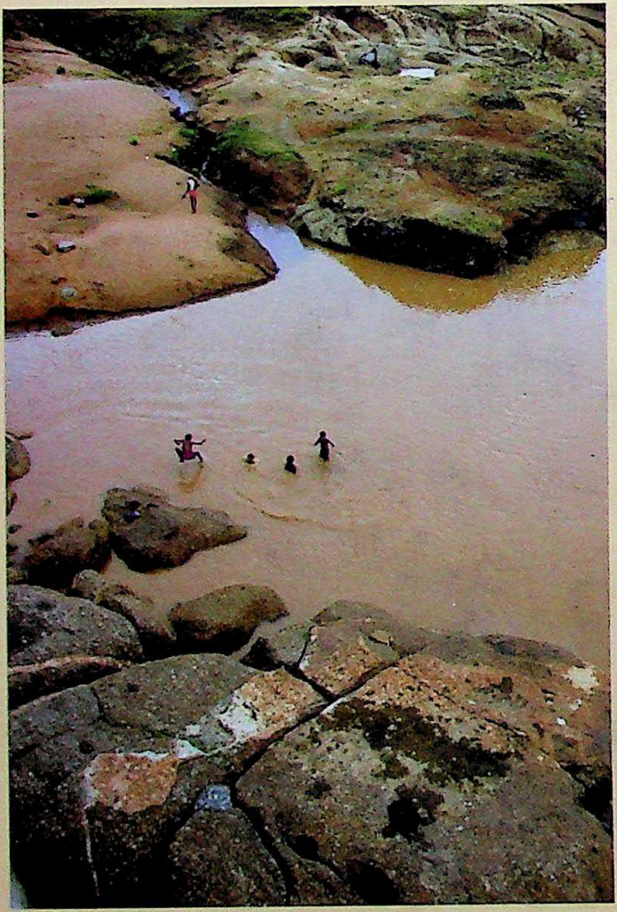

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